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Contractors and Engineers

FEBRUARY 1953



Concrete paving equipment lineup on Peter Kiewit Sons' Co. 8-mile contract on U.S. 85-87. This new 24-foot-wide 8-inch-thick strip on a hilly grade forms one half of a modern divided highway.

Story on page 84.

PROJECT SUPT. TELLS EXPERIENCE WITH POZZOLITH AND EMBECO

FORD J. TWALTS CO.
MORRISON-KNUDSEN COMPANY, INC. AND T-S CONSTRUCTION ENGINEERS, INC.
JOINT CONTRACTORS AND CO-ADVENTURERS
449 SOUTH BRADBURY AVENUE
LOS ANGELES 17, CALIFORNIA
5
PRATT, MURPHY 5185

Re: City Park Garage Project

The Master Builders Co.
Gentlemen:

We have used two of your products on this job, and believe that you will be interested in knowing how we feel about them.

The first of these is your Embeco No. 5, metallic waterproofing, which we have used to shut off a hydrostatic head of water producing cracks in our concrete below grade. Embeco No. 5 was most efficient and lived up to your claims for the product. We believe that it is a first class material for waterproofing purposes.

In addition, we used your cement dispersing agent, Pozzolith, in some 40,000 cubic yards of concrete on the entire job. The concrete was designed with a 4" slump, 3000 p. s. i. at 28 days, with your recommendation of 5.1 sacks to the cubic yard, plus Pozzolith. The strengths obtained averaged over 3500 p. s. i., and we never had one cylinder that did not come up to the required strength. The resulting concrete surfaces, after stripping, were excellent.

Again we believe that you have an excellent product in Pozzolith and that it lives up to the claims that you make for it in every respect.

Very truly yours,
C. A. McMahon
Project Superintendent



City Park Garage, Pershing Square, Los Angeles, Calif.; Archt. Stiles Clements, Associated Architects & Engineers, Consllg. Engr.—Murray Erick Associates, Contrs.—Ford J. Twalts Co., Morrison-Knudsen Co., Inc., and T-S Construction Engineers, Inc.; 50,000 Cu. Yds. of Pozzolith Ready-Mixed Concrete Supplied by Graham Brothers. All companies of Los Angeles, Calif.

POZZOLITH READY-MIXED CONCRETE In World's Largest Underground Garage

To a long list of outstanding structures built with Pozzolith Ready-Mixed Concrete has been added this 2000-car underground garage.

Use of Pozzolith Concrete assured designed strength . . . also resulted in quicker re-use of slab shoring material—reducing costs and speeding up work; good concrete surface—holding down finishing cost of slabs.

Pozzolith's cement-dispersing, water-reducing and air-entraining action (making available the optimum amount of air) produces these further benefits:

1. Reduced Shrinkage — for less cracking.
2. Lower Permeability — for less "waterproofing" . . . later.
3. Increased bond-to-steel — for better construction.
4. Greater Durability — for lower maintenance costs.

Full information and Pozzolith booklet on request.

Over 600 Leading Ready-Mixed Plants
Are Producing Pozzolith Ready-Mixed Concrete

CEMENT DISPERSION ALSO KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

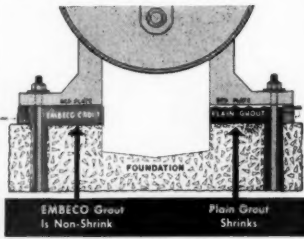
MASTERPLATE . . .

Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also spark-resistant and static-dissipating. Non-colored and 11 colors. For new floors and resurfacing.



EMBECO . . .

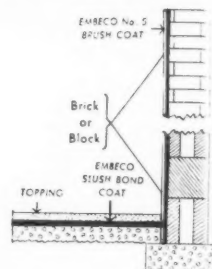
Embeco (1) produces flowable, non-shrink, ductile grout which . . . (2) gives full, level, lasting bedplate contact . . . (3) helps avoid costly shutdowns.



Foundation Treatments

BRUSH COAT METHOD

The Embeco metallic brush coat method is an effective means for checking the passage of water in foundation walls, even when the water is under pressure. Typical of the results being obtained, the experience on the City Park Garage is described in letter at the left.



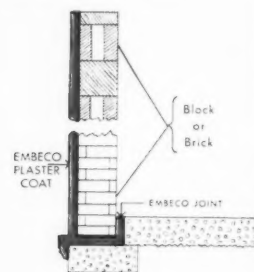
Embeco Brush Coat Method

Successive brush coats of Embeco are applied to surface — either interior or exterior — and tightly bonded metallic cement sheath. This is used for basements, reservoirs, swimming elevator pits, retaining walls, sewers, tunnels, tanks and the like, either when installed or

Full directions for the use of the Embeco brush coat method on haydite, cinder block, concrete, concrete block, soft brick, hollow stone, on request.

PLASTER COAT METHOD

The Embeco plaster coat method provides permanent and lasting protection against water penetration, lasts the life of the structure.



Embeco Plaster Coat Method

This method can be used either for interior or exterior application. It is particularly recommended for structures where there are known adverse conditions.

An Embeco plaster coat is more effective than ordinary plaster coat because it does not prevent the occurrence of shrinkage cracks because expansion of the metallic aggregate lowers porosity of the mortar.

Complete directions on the Embeco plaster method on request.

Method For Setting Floor Bricks

Non-shrink Embeco mortar is widely used for heavy industrial floor brick, vitrified brick, and other types of exposed floor tile and counteracts shrinkage of mortar joint and mortar, thereby preventing seepage of moisture and corrosive liquids into mortar and between bricks and tiles.

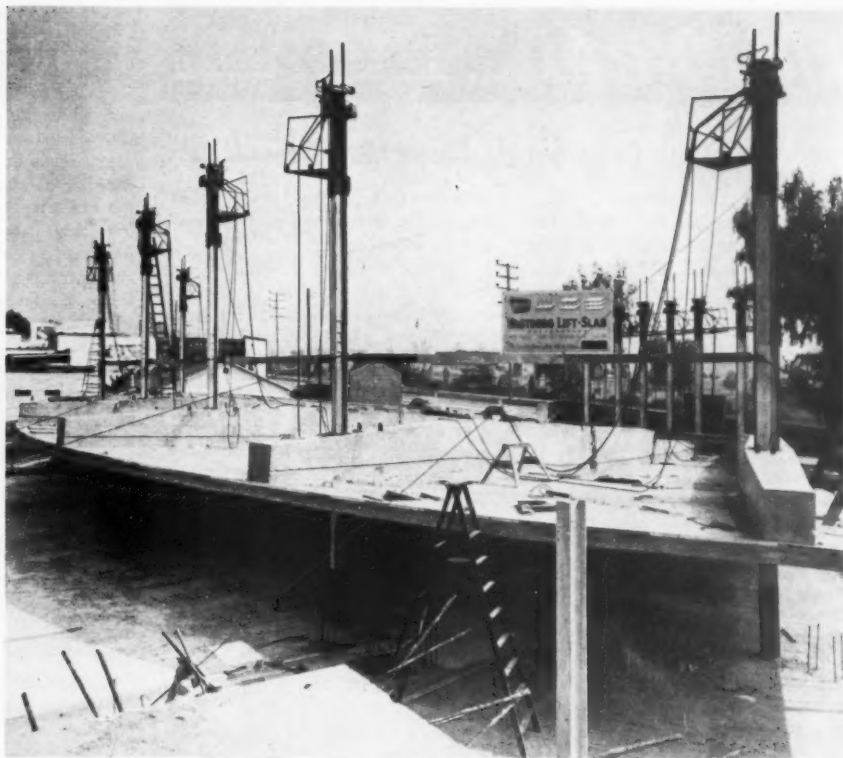
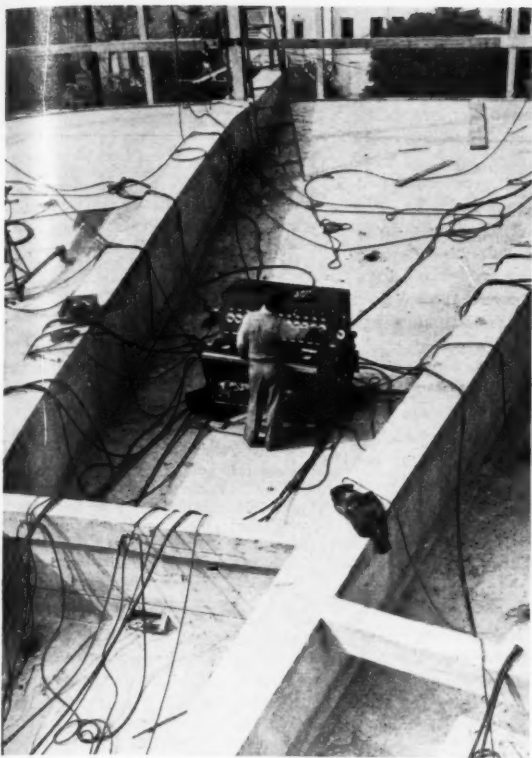


Grouting Floor Brick And "Bagging" Surface

For industrial work as dairies, bakeries, plants and meat packing plants, use of Embeco shrink mortar confines corrosion to the surface, insuring long floor life. On architectural verandas, terraces, roof-decks and other slabs, Embeco mortar resists leakage into the structure.

Full directions on the Embeco method for floor brick, and for the foundation treatment referred to above, may be obtained from The Master Builders Co., Cleveland 3, Ohio.

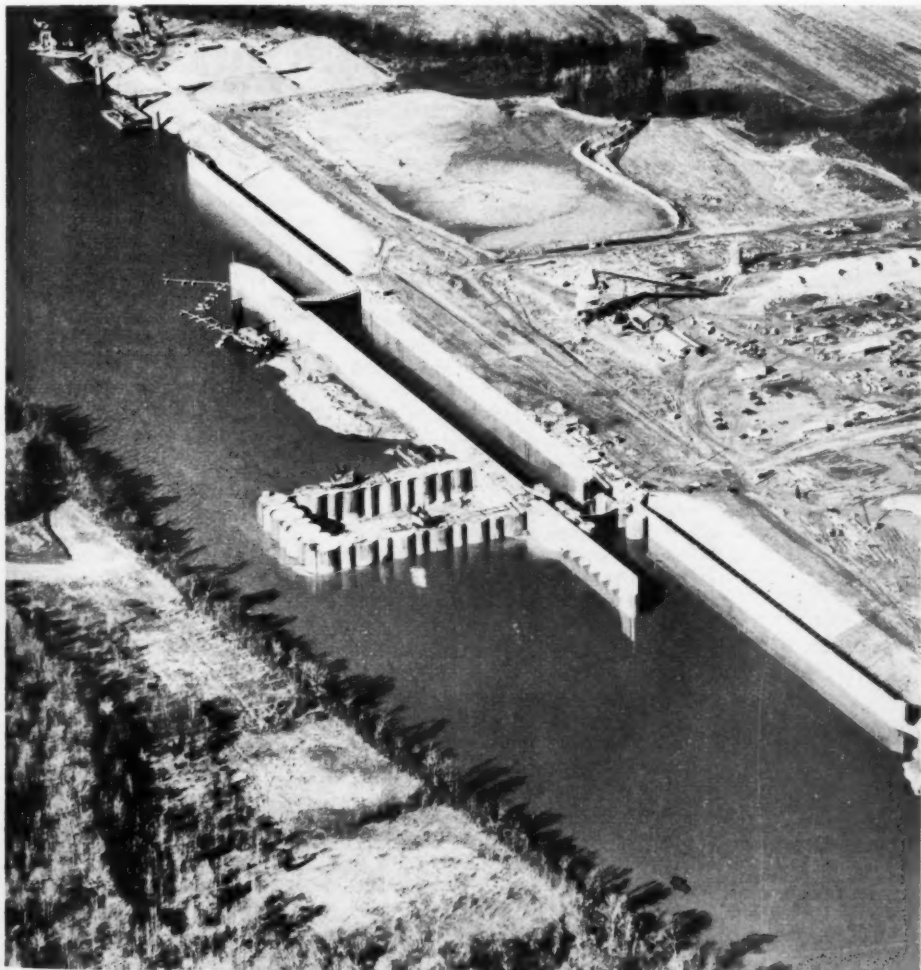
The MASTER BUILDERS Co.
Cleveland 3, OHIO Subsidiary of American-Marietta Company TORONTO, ONTARIO



A religious edifice goes up in California. Left: control point for the lift-slab job is this hydraulic console with lines radiating to the powerful jacks atop each column. Right: a million pounds on the way up. The building has a 50-foot-wide roof at the narrow end and a maximum chord length of 132 feet. Work by Vagtborg Lift-Slab Corp., Los Angeles.

NEWS AND VIEWS

of the construction industry—lift-slab construction, lock, dam



Overflow channel for New York City's Downsview Dam gets a granite lining.



A McKiernan-Terry S-5 hammer drives timber piles for a bridge widening on New Jersey's Garden State Parkway.

Cheatham Lock, one of the largest of the nation's inland waterways, ready for operation with temporary upper gates in place. Located on the Cumberland River in Tennessee, it was built by the Corps of Engineers at a cost of \$6,000,000.

EDITORIAL

Cutting Costs Should Mean More Jobs

While the 1953 construction picture should be just as rosy as last year, contractors might bear in mind that reductions in bid prices may very well be expected. If construction costs can be reduced, more new jobs will open up. Thousands of owners of old and obsolete buildings, for instance, are waiting for a drop, or at least a leveling off, in costs in order to start construction of modern buildings.

Cutting costs is not easy. But those who try to do something about it will get the jobs—and the profits too, we hope.

Wage rates will probably stay where they are for a while, along with materials, equipment, and transportation costs. Any cost reductions that are effected in the construction industry will, no doubt, come about from increased efficiency in a contractor's organization, such as the employment of men and equipment to the best advantage.

Contractors seldom need advice on how to get the most out of their personnel, but equipment is often a different story. Hanging on to obsolete and inefficient equipment is risky with present-day competition. A careful examination of the new machines on the market is suggested. The old saying, "You have to spend

money to make money", makes sense sometimes. Even small savings cannot be disregarded.

The use of 2-way radios and car telephones, for instance, is an important timesaver to key men on a construction job. Contracting firms that are so equipped feel that the cost for such installations is money well spent.

Many companies are developing a preference for the use of torque converters on heavy equipment. They indicate that the smoother performance increases efficiency, lowers maintenance costs, and results in a definite saving.

Alert contractors at all levels are usually quick to take advantage of any versatile construction machine that can do more than one job well. Or they employ the many attachments that are available for the indispensable tractor or motor grader.

These are just a few examples of how some firms are paring costs with present-day equipment. Each contractor, of course, has his own individual problem. But the over-all objective of lowering costs and still keeping in the black requires an open mind on all possibilities for putting savings into effect. Only in this way can we expect more jobs to be put up for bidding.

Route-Numbering System Simplified

New Jersey's revision of its highway route-numbering system is a big step forward in giving more consideration to the convenience and safety of the traveling public. Motorists had long been plagued in the Garden State by the fact that several different numbers, both state and Federal, had been assigned to a single section of road. This confusing system of numbering has been revised and streamlined so that any overlapping of numbers along a stretch of highway is kept to a minimum. See news item on page 22.

For over a year the New Jersey State Highway Department has been working to reduce the multiplicity of its highway-marking signs. It has achieved its purpose by dispensing with state numbers on U. S. marked routes. Furthermore, it does not as-

sign to a state route any number now used by a Federal route within the state.

This simplification of the 25-year-old numbering system is a boon to the bewildered motorist who has been confronted with numerical totem poles that left only a blur on his vision as he flashed past intersections. In some cases as many as six different state-route numbers have been consolidated into a single Federal-highway number.

If New Jersey, with its myriad highways interlacing one of the most densely populated sections of the country, has improved an outmoded route-numbering system, other highway departments can certainly do likewise. In many states such a program is long overdue. New Jersey has set a good example.

Clark Hill Dam

One unit of 40,000 kilowatts was brought into production on January 5 at Clark Hill Dam, on the Savannah River, 22 miles from Augusta, Ga. The Corps of Army Engineers constructed this dam for flood control, navigation, and power, and it is the first major project completed in the Congressionally approved comprehensive plan for the development and control of the water resources of the Savannah River Basin. (For an account of the construction, see C. & E., Sept., 1949, pg. 18.)

Additional units of 40,000 kilowatts each will be completed at intervals over the next two years until the total seven units scheduled, aggregating 280,000 kilowatts, are in operation.

Photogrammetry Society News

Alfred O. Quinn is the newly elected President of the American Society of Photogrammetry, Washington, D. C. Arthur C. Lundahl is First Vice President and John I. Davidson, Second Vice President. Mr. Quinn is head of the Engineering and Field Surveys Divisions of Aero Service Corp., photogrammetric-engineering firm, of Philadelphia, Pa.

The Society, in its 19th year, has 3,000 members, including representatives of Government agencies, oil and mining companies, colleges, and commercial mapping companies. Over 1,000 members attended the 3-day annual meeting in Washington last month. Problems discussed included special emphasis on Arctic mapping and interpretation of air photos.

Building-Floor Live Loads

Design requirements for structural elements in buildings depends on knowledge of the loads to which these elements may be subjected. Such loads include dead loads, live loads, snow loads, wind pressures, and earthquake forces. Dead loads consist chiefly of the weight of the building itself, while live loads consist of the variable loads due to human occupancy—movable goods or materials and human beings.

Because of the meager information available on live loads on floors in typical occupancies, a study of such loads was undertaken in 1947 by the National Bureau of Standards in cooperation with the Public Buildings Service. The results obtained, together with summaries of previous surveys, have been published in National Bureau of Standards Building Materials and Structures Report BMS 133—"Live Loads on Floors in Buildings", by J. W. Dunham of PBS and G. N. Brekke and G. N. Thompson of NBS. Typical occupancies, with techniques of obtaining the data, and typical building-code requirements included are: residential, business, mercantile, assembly, industrial, and storage. While necessarily limited to a few buildings, the data obtained were complete, containing sufficient detail for a comparative study of the variation in loading on different parts of the same floor. The book is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. It is priced at 20 cents.

Covering the Field

• Airport

Extension and expansion of runways and taxiways on the Lambert-St. Louis Airport included the laying of 25-foot concrete lanes. Story on page 2.

• Bridges

A culvert, two reinforced-concrete-deck continuous-girder bridges form part of a highway relocation. Page 24. Using the lift-slab method, a bridge is lowered by hydraulic jacks. For description of job, see page 102.

• Building Construction

Steel and reinforced-concrete frames and marble facing for a library and archives building. Story on page 15. Cellular glass sandwiched between two layers of concrete insulates the walls of a housing project. Page 32. The AEC's big Savannah River plant is being pushed to completion. Story and pix of this 267-building project appear on page 46.

• Dam

Construction of Fort Randall Dam meant some heavy earth-moving. Rock excavation, dredging, tunneling described in words and pix on page 6.

• Finance and Law

What do you know about Federal income tax? On page 65 you'll find some useful tips on what you can and cannot do. Keep on the right side of the law with your contract problems. Page 80.

• Highways

A relocated Oregon highway section gets an asphaltic-concrete surface. Story on page 10. Permanent reconstruction and temporary stabilization of shoulders. Story and pix on page 26. How to tackle roadside litter: AASHO committee discusses the problem and makes recommendations. Page 37. Hot-mix asphaltic concrete over bituminous macadam is economical for old roads. Read about it on page 42. Heavy grading on wet ground presents a haul-road problem on a road relocation. Story on page 55. A caliche subbase, similar to that under an old road, was found best for its new urban approaches. Page 67. Maintenance by contract is adopted by New Mexico. Story of a 51-mile highway section is on page 73. Our cover-photo job: portland-cement concrete paving in Colorado. For story and pix see page 84.

• Pipeline

Dangerous proximity to high-voltage transmission lines made a concrete-pipe aqueduct tricky to lay. How the contractor beat it, page 95.

• Power Plant

Construction of a floodproof power plant included the building of an intake structure and a sealing weir. Story on page 59.

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Care for Your Equipment— In Burmese and English

Solicitude for machines on the job: "Don't overwork your baby brother, stop just in front of him." That's a quote from a delightful book sent to R. G. LeTourneau, Inc., Peoria, Ill., by one of its dealers in Burma.

"How to Do It—Or Not", is an instruction book for Burmese equipment operators. It consists of sketches of construction equipment pictured in various operations. Accompanying each sketch is a bilingual message in English and Burmese. A glance at the sketches and the accompanying advice shows that they make uncommonly good sense. For example, one sketch on "Think about the poor 360 horses, don't overwork them. This is the easy way—" points up the oft-proven advantage of downhill loading.

Some readers may wonder why, in many of the sketches, an individual carries an umbrella on an earth-moving job. LeTourneau's informant explains that the umbrella in Burma is the symbol of dignity to the superior staff from foremen up. When a native foreman is appointed, he receives an umbrella to symbolize his dignity.

Overseas Engineering Jobs

An urgent appeal for experienced engineers to work on overseas military projects has been made by the New York District, Corps of Engineers, U. S. Army. The jobs are located in Alaska, the Caribbean area, Germany, French Morocco, France, Japan, Okinawa, Turkey, the Philippine Islands, Trieste, Libya, Saudi Arabia, and Iceland.

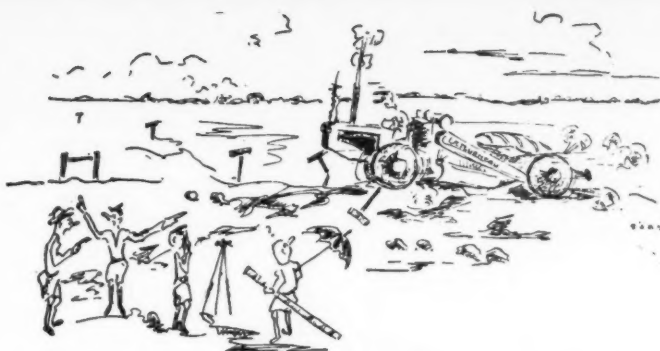
Men are needed in the following categories: Professional Engineering (architects, general and technical engineers)—\$4,205 through \$8,360 per year. Sub-Professional (construction-maintenance supervisor, cartographic draftsman, engineering aids, and inspectors of various types of construction)—\$5,060 through \$5,940 per year. Office Administration (including position classifier, cataloger, examiners, advisers, etc.)—\$5,500 through \$5,940. Trades (including power-plant operators, sheet-metal worker, pump repairer, maintenance foreman, operating engineer, and refrigeration mechanic)—to \$3,740 per year.

Additional compensation includes periodic pay increases, living-quarters allowances, and cost-of-living allowances. In several locations, free housing is available as well as travel for families.

Further information may be obtained by writing to the Personnel Branch of the Office of the District Engineer, Corps of Engineers, U. S. Army, 80 Lafayette St., New York 13, N. Y.

Blaw-Knox Promotions

John D. Jessen has been appointed Manager and Chief Engineer of the Steel Form Department of the Blaw-Knox Co., Pittsburgh, Pa. He has been with the Department since 1925, and for some years served as a consultant to the company's French affiliate in establishing a steel-form business in foreign countries. Dur-



These are not ninepins, they are here for a purpose. Please do not knock down. မြေကြီးပေါ်မှာ ဂိုက်ကားသုံးစွဲရာတွင် ခံနိုင်ရည်ရှိရန်အတွက် ဂိုက်ကားသုံးစွဲရာတွင် အလုပ်ကို နှစ်သက်စွာ ဆောင်ရွက်ရန် အရေးကြီးသည်။ (6)

One of the illustrations from LeTourneau's Burmese-English instruction book.

ing World War II, he was Project Manager on two of the synthetic-rubber plants built by Blaw-Knox.

H. P. Cerutti, with the Department since 1945, succeeds Mr. Jessen as Assistant Chief Engineer.

Seabees—11 Years Old

Last December, the Navy's master builders, the Seabees, reached their eleventh anniversary. Known for their construction feats during World War II, the Seabees are the youngest component of the Navy. The organization was authorized shortly after Pearl Harbor, and in 1946 was made a permanent part of the Navy in recognition of the skill and ingenuity of its members in the construction of advanced bases and their performance in amphibious operations.

Today, a CB force is combining know-how with can-do on vital construction and maintenance jobs overseas. During the past year the men have employed their skills in Korea, Japan, the Philippines, Guam, Kwajalein, Midway Island, Alaska, Cuba, Newfoundland, and North Africa.

Where traffic averages 28,000 vehicles a day



Section of the Merritt Parkway which was paved with Texaco Asphaltic Concrete in 1949.

Connecticut's Merritt Parkway is one of the busiest traffic arteries in the East. During 1952, traffic on one section averaged 28,000 vehicles a day and reached a 24-hour peak of 55,000.

Resilient, heavy-duty Texaco Asphaltic Concrete was used last year to resurface another section of this heavily traveled route. Joints in the old concrete pavement were cut out to a depth of one inch and filled with a fine asphalt mix. Following a tack coat of RC cutback asphalt, the hot-mix Texaco Asphaltic Concrete was laid in two courses, a 1½-inch binder course and 1-inch top.

Whether laid over an old pavement, as on the Merritt Parkway, or on a new foundation, hot-mix Texaco Asphaltic Concrete is a sound choice wherever heavy traffic must be served. Its shock-absorbing resilience, freedom from joints, low susceptibility to changing temperatures and immunity to ice control chemicals insure years of satisfactory service with low upkeep cost.

Two helpful booklets are available which describe hot-mix Texaco Asphaltic Concrete, as well as the various other types of road and street construction in which Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils are used. Copies may be obtained without cost or obligation by writing our nearest office.



Above photos show Texaco Asphaltic Concrete, under construction and completed, on another section of the Parkway. The contractor was Cold Mix, Inc., Port Chester, N. Y.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
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TEXACO ASPHALT



Huge Marion 191-M shovel empties its 10-yard bucket of earth into 50-ton Euclid.



The massive load is dumped as twinned tractors move in to buck through its center.

Dirt Moves Fast at Fort Randall Dam

**Contractor Averages 1,200,000 Yards per Month
With 10-Yard Shovels and 50-Ton Dump Trucks**

By L. H. HOUCK

• SOME of the fastest dirt-moving in the country took place last year in South Dakota at Fort Randall Dam, a \$197,300,000 unit in the Missouri River control and development program of the Corps of Engineers, U. S. Army. Western Contracting Corp. of Sioux City, Iowa, moved 3,000 cubic yards an hour, or an average of about 1,200,000 cubic yards per month in two 10-hour shifts per day under stage 3 of the earthwork.

Important activity in August

(when the job was visited) was the excavation in the spillway area downstream from the axis of the dam. Stage 3 earthwork was completed in November, 1952. This spectacular dirt-moving job used two of the world's largest electric loading shovels and 20 of the world's largest dump trucks, plus numerous other standard dirt-moving units and shop-made special equipment.

Fort Randall, farthest downstream of all the large main-stem units intended to provide flood storage and generate hydroelectricity, is a rolled earth fill of 28,000,000 cubic

yards, with a downstream berm and an upstream protection blanket of chalk adding 19,000,000 cubic yards. It was designed to use all suitable excavated material from outlet works and spillway. Two miles long, 160 feet high, and 1,600 feet wide at the base, its gated chute-type spillway, with a capacity of 620,000 cfs, required 28,000,000 cubic yards of excavation and about 50,000 yards of concrete. The reservoir will store 6,300,000 acre-feet of water.

Twelve reinforced-concrete-lined diversion tunnels, 873 feet long and 22 feet in diameter, were driven be-

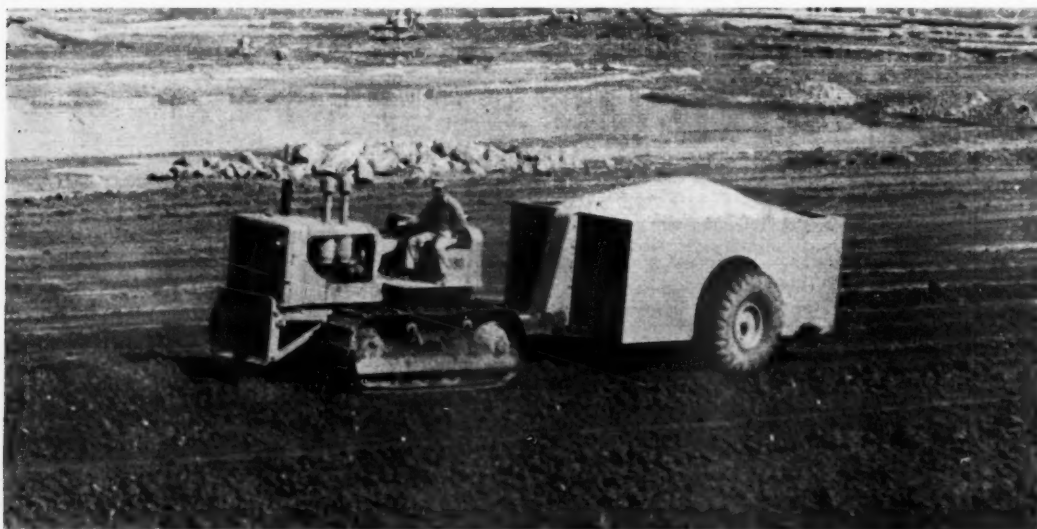
neath the dam through the Niobrara Chalk in the east abutment. Four control reservoir releases, and eight lead to turbines and generators in the powerhouse designed to produce 40,000 kw each or a total of 320,000 kw—more than twice the installed generating capacity of South Dakota.

Spillway-water approach channel to the gated crest is excavated to the Niobrara Chalk, the regional bedrock, and is controlled by 21 gates, 40 feet long and 29 feet high. The gates are anchored to and separated by 20 piers, each 8 feet wide, which also form the bridge supports for U. S. 281 and 18, which are routed over the completed dam.

The center section and upstream blanket of the dam proper is composed of impervious material. A chalk berm on the downstream increases the stability of the dam and provides for economical disposal of chalk excavation from the outlet works.

Chalk from the spillway excavation is being used on the upstream slope of the dam to protect against wave action. The blanket, ranging up to 70 feet in thickness, starts at range 3,850 with an elevation of 1,263 and slopes upward 860 feet to elevation 1,355. Beginning at elevation 1,355 it slopes 7 to 1 to the elevation of 1,385, 10 feet below the top of the dam. Maximum pool level is 1,375 feet above sea level.

Area E, the spillway area downstream from the axis of the dam, originally contained 11,000,000 cubic



Final compaction was made with a sand-ballasted pneumatic-tire Ferguson roller pulled by an Allis-Chalmers HD-20.

yards of excavation and the stage 3 contract provided for removal of 3,500,000 cubic yards of this material. Western had an additional 375,000 cubic yards of precision rock excavation in Area D spillway where rock was cut with a Sullivan shale saw to a tolerance of $\frac{3}{8}$ inch plus or minus.

Loading Capacity

On the working theory that you can't haul more than you can load, Western's array of equipment was headed by two 191-M Marion electric-powered shovels normally rated at 10 cubic yards but equipped with oversize buckets, and they normally loaded 50-ton Euclid end-dumps in three passes. These loading shovels have 43-foot 8-inch booms and 27-foot 4-inch handles. One was powered with electricity from a special company-owned 1,000-kw plant on the site and the other used bought

fly from the excavation area to the base of the dam.

Twinned Tractors

Outsize equipment often introduces outsize problems. For instance, an ordinary dozer had to make up to three passes in bucking the center of a 50-ton dump from one of the big Euclids.

Job ingenuity was called for to solve the problem and the Western shop twinned two Allis-Chalmers HD-19 torque-converter tractors to one shop-made 22-foot dozer blade by removing each inside track and bolting the two tractors to a center frame. Each tractor could be re-

turned to individual identity when disassembled. Controls were tied together and engines were synchronized so one operator could operate the twin machines from the left-hand seat.

The twin machine hit the 50-ton dump loads at the center, held the blade down and bucked into the load. After slowing down slightly the Allison torque converter picked up speed and it dozed through with one pass.

Dirt left on the wings on each side was dozed by two Caterpillar D8's following. Such loads were spread in 1-foot uncompacted lifts in one pass averaging about 2 minutes.

High yardage being dumped taxed the capacities of men and machines and small delay difficulties soon caused big pileups. For instance, quick dumping of trucks was imperative. Bottom-heated 50-ton "Eucs" dumped fairly fast even when material had a high moisture content but other dumps often required 7 to 8 men to start the dump with shovels when loads were wet.

The Western shop came up with a tractor attachment to cure this problem. A special thin blade was built and attached to 20-foot arms which were mounted on the front of a D8. When a dump truck was posi-

(Concluded on next page)



C. A. Hollis, engineer for the Corps of Engineers, and Carl (Rip) Collins, General Superintendent for Western Contracting Corp.

current from the Northwestern Public Service Co. supplemented by a company-owned smaller power plant.

Other loading equipment consisted of a 54-B Bucyrus-Erie 3-yard shovel, a 111-M Marion 4½-yard dragline, and a 151-M Marion 8-yard dragline.

Even the spill from the big shovel buckets over the 14-foot-wide Euclids posed a small problem. Two and three passes of a standard-width dozer were required to clean up the spill which slowed down loading. This problem was solved by adding 30 inches to each end of a standard dozer blade and cleaning it up in one pass.

Hauling Equipment

Twenty 50-ton Euclid end-dumps with two 300-hp engines twinned under the hood, each driving one of the two rear axles through Allison torque converters and Torqmatic transmission, and capable of speeds up to 35 mph, were stars of the long 7,000-foot haul—2½ miles per round trip.

Each dump truck was equipped with two Allison torque converters and two Torqmatic transmissions. Exhaust gases were piped into the double bottom to heat beds for faster dumping.

There were eleven 20-yard Macks and twelve 13-yard bottom-dump Euclids engaged in helping the dirt



HOW TO BUILD

A PARKING LOT FAST



This busy Caterpillar Diesel HT4 Shovel is clearing land in a hurry for an Ohio Bell Telephone Company parking lot in Cleveland. Contractor is Henry Miesz of South Euclid, Ohio.

The versatile Cat Shovel can get in and out of places bigger specialized equipment can't touch. Because its bucket is wider than any part of the tractor, it works close to walls and trees. The operator enjoys perfect visibility, too: all hydraulic connections are completely enclosed—no hoses or plumbing to interfere. It's a fast shovel . . . one that can raise and dump its bucket at the same time.

There's plenty of strength built into this machine, too. Its frame and mounting and lift arms are all welded and cross braced. The bucket has a heat-treated high carbon steel cutting edge. And there are 11,250 pounds of push at that cutting edge.

Like all Caterpillar machines, this shovel is a rugged, dependable, economical piece of equipment. Your Caterpillar Dealer will gladly demonstrate its advantages. He's the man to see, too, for service and for the genuine Caterpillar parts which guarantee you the kind of quality that's built into every one of these big yellow machines.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

**DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT**

The Dirt Moves Fast At Fort Randall Dam

(Continued from preceding page)

tioned to dump, the D8 rolled up and pushed the blade between material and bottom of the bed and raised slightly to make the load slide out almost instantly.

Another shop-made contrivance that doubled the use obtained from one D8 was a rear-mounted curved-tooth scarifier. With dozer blade in front and scarifier behind this machine was ready for bulldozing or scarifying to increase bond between lifts, especially when using water compaction.

Material laid down in its proper zone was dozed in 8-inch uncompacted lifts, moistened and rolled six times with two 30,000-pound heavy-duty tamper-type sheepfoot rollers drawn by two A-C HD-20 torque-converter tractors. Compaction was 90 per cent or better at optimum moisture content.

Use of extra-heavy hauling equipment was a definite aid to compaction. Final compaction was made with a 50-ton sand-ballasted pneumatic-tire Ferguson hitched to an A-C HD-20.

Material was spread by three Caterpillar D8 dozers and another D8 was kept as a standby. Finish work was done with two Caterpillar No. 12 graders.

Structural Rock Excavation

The 375,000 cubic yards of structural rock excavation for the spillway is a unique job, since both the slope and the sidewalls are cut to $\frac{1}{8}$ -inch tolerance plus or minus. Sidewalls were finish-cut with a Sullivan shale saw and Caterpillar No. 12 graders finish-scraped the chalk 4 to 1 spillway slope. This section of the job is some 40 feet below the river. Elevation is 1,195.5 and a typical river stage in August was 1,244.

Al Johnson & Associates, Minneapolis, Minn., is the concrete contractor on this section and Western is drilling wall holes for the concrete-reinforcing tiebars which will be grouted in the wall. These holes are 6 inches in diameter with 12-inch bell bottoms and run 30 to 40 feet deep.

Western Chief Dredge

The Western Chief, said to be the largest demountable dredge, worked around the clock in three 8-hour shifts, pumping sand through a mile of 30-inch pipe at the rate of 50,000 yards daily. The dredge is a cutter-head type with a 36-inch intake, 68-foot ladder and 30-inch discharge. It is 42 feet wide and 172 feet long and boasts 6,000 hp in



Jobs Done Quicker, Cheaper

Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdily constructed instruments that will automatically show the operator the exact grade or slope on which he is working.

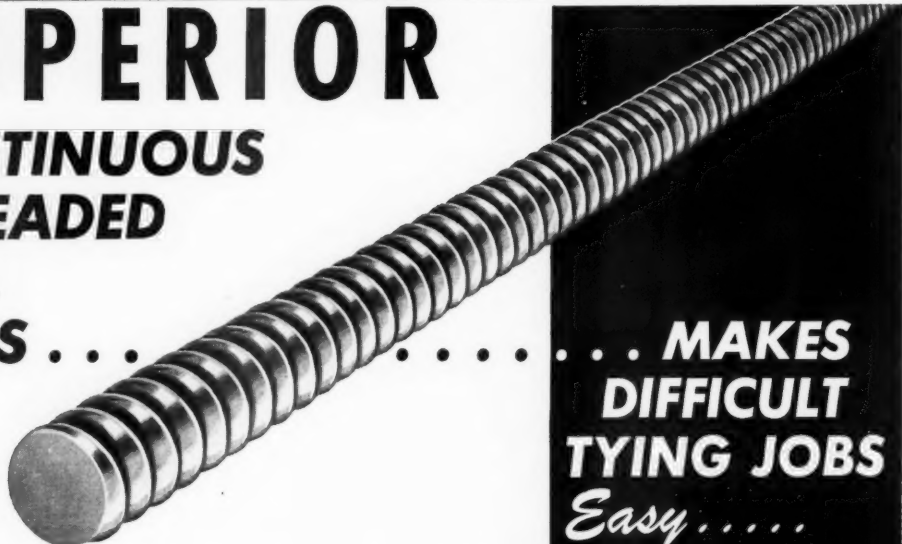
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THE SLOPE-METER CO. EXCELSIOR, MINN.



Twinned HD-19 tractor-dozers finishing off a 50-ton dump.

SUPERIOR CONTINUOUS THREADED COIL RODS . . .



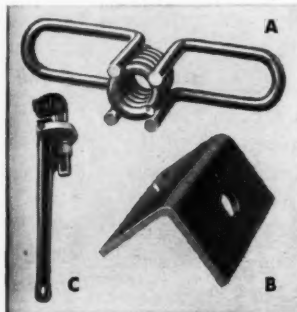
... MAKES
DIFFICULT
TYING JOBS
Easy . . .

Superior Continuous Threaded Coil Rods, with or without Coil Wing Nuts and Corner Brackets, are a valuable supplement to Superior Coil Ties and standard working parts when job conditions are unusual or difficult.

In three typical applications, shown at the right, these Continuous Threaded Rods are used; (1) to tie form corners; (2) as an anchor rod tie down and as coil bolts; and (3) as a coupling for two coil ties providing an adjustable form tie.

Available in $\frac{1}{2}$ ", $\frac{3}{4}$ ", and 1" diameters and in any length up to 10 ft., Superior Continuous Threaded Coil Rods in quantities can be cut to length on the job with a heavy-duty hand Coil Rod Cutter.

Superior Continuous Threaded Coil Rods are the answer to unusual or difficult tying problems. When you use Superior you are assured of the best in design, material, and workmanship.



A-COIL WING NUTS

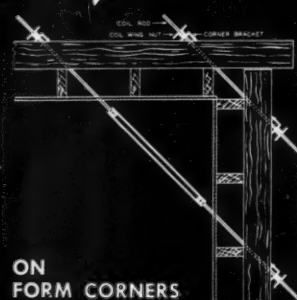
Coarse helix coils form the threads. Easily applied and removed from rod. Develops maximum capacity of rods.

B-CORNER BRACKET

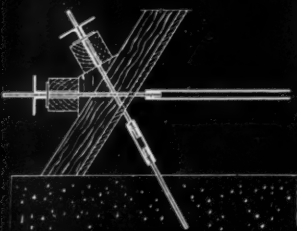
An exclusive Superior feature. Provides simple, efficient method of tying form corners and bulkheads.

C-SPECIAL COIL ROD WRENCH

Heavy-duty Stillson type wrench with special jaws for gripping and turning Coil Rods with least damage to threads.



ON
FORM CORNERS



FOR ANCHORAGE



AS AN INTERNAL TIE
Two Coil Ties and a length of
Coil Rod make an adjustable
form tie and spreader.

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Pacific Coast Plant: 2100 Williams St., San Leandro, Calif.

REQUEST A COPY OF OUR NEW CATALOG 500...

It contains a valuable table for spacing studs, wales, and form ties.

CONTRACTORS AND ENGINEERS



Flat-Sided Conduit

Flat-sided nonmetallic conduit for concrete-encased underground power and communication circuits is now available from the Soapstone Duct Co., 110 Linfield Drive, Menlo Park, Calif. The flat sides permit multiway duct systems to be built up quickly and accurately without the use of spacers required with round conduit, and are said to be particularly advantageous for communication circuits and for power circuits which do not require wide spacing between ways.

Soapstone flat-sided conduit is made of a mixture of ground soapstone, cement, and other inert material. Standard lengths are 4 feet with 3½-inch and 4-inch diameters. The pipe may be cut with a handsaw to fit odd lengths. A collar-type coupling which requires no tooling is provided with each length of conduit.

For further information write to the company, or use the Request Card at page 18. Circle No. 441.

Joint-Seal Applicator

A new applicator for putting sealing compounds in joints of concrete and asphalt construction is announced by Phillips Products, Inc., 1446 West 10th St., Cleveland 13, Ohio.

The No. 77 applicator is made to apply the ready-mixed cold-applied sealers. It has a flow-control valve.

A set of three nozzles is furnished with each applicator. These come in widths of ¼ inch for contraction joints, ⅜ inch for contraction and construction joints, and ½ inch for expansion joints. Two other nozzles are available, one ⅜ inch wide for sawed joints, and a special nozzle for maintenance sealing. Other special nozzles are made on order.

For further information write to the company, or use the Request Card at page 18. Circle No. 509.



THE QUINN STANDARD FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers

QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1645-1251 BOONE IA

Hose for Pile Driver

A new hose for steam pile drivers that will withstand temperatures up to 366 degrees and steam working pressure of 150 pounds is made by Hewitt Robins Inc., 666 Glenbrook Road, Stamford, Conn.

The inner tube of the hose is made of oil-resistant synthetic rubber that is said not to deteriorate when exposed to oil used in lubricating the hammer through the hose.

The hose will be sold in maximum lengths of 50 feet in the following inside diameters: 1¼, 1½, 2, and 2½ inches.

For further information write to the company, or use the Request Card at page 18. Circle No. 433.

Hoists and Dump Bodies

A booklet on its hydraulic hoists and truck bodies released by the

Anthony Co., Streator, Ill., discusses hoists in relation to bodies of appropriate size. A selection guide helps the prospective buyer choose a hoist of suitable capacity. Hoists are offered for the 8-foot, 8½ to 10-foot, and the heavy-duty truck bodies. According to the manufacturer, the gear design of the Anthony roller-bearing pumps used in the hoist

eliminates one cause of pump failure by reducing mechanical thrust on the gears.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 533.

Good lubricants at regular intervals are good for your equipment.

CHOOSE a CHAUSSE Model CJD-400 for your SMALL jobs



This new addition to the CHAUSSE line of Spreadwell Distributors is specially designed for ease in manipulating all controls. Note the operator's platform at left rear, where all controls are within easy reach. Like all CHAUSSE spreaders, this new model is the last word in rugged, dependable, efficient performance.

Write for specifications.

CHAUSSE Manufacturing Co., Inc. - 4453 Fourteenth St. - Detroit 8, Michigan

Compactor solves pressing problem for contractors...with help of TIMKEN® bearings

ITS exclusive "Rocking Beam" construction helps this patented Bros Roll-O-Pactor compact over 1,200 yards of dirt per hour. This new development distributes the load evenly on all tires and keeps them all squarely in contact with the ground even when riding slopes up to 19°. To allow free rocking and wheel oscillation, Bros engineers mount their "Rocking Beam" on Timken® tapered roller bearings.

The tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. Line contact between rollers and races gives them extra load-carrying capacity too. Shock loads are easily carried.

Closures are made more effective because Timken bearings hold shafts and housings concentric. Lubricant is kept in—dirt, dust and grime kept out.

And the true rolling motion and incredibly smooth finish of Timken

bearings practically eliminate friction.

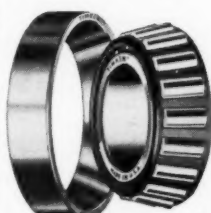
Backed by over half a century of bearing research, Timken bearings are first choice throughout industry. Make sure you specify Timken bearings for the machinery you build or buy. Look for the trade-mark "Timken" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



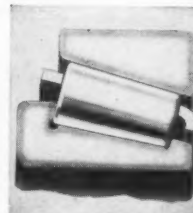
This symbol on a product means its bearings are the best.



THE WILLIAM BROS COMPANY uses Timken bearings on the wheel axles of its Roll-O-Pactor to insure free rolling under maximum load.



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



GREATER LOAD AREA

Because the load is carried on the line of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

Asphaltic Concrete Surfaces New Highway

Hot Plant and Rock Crusher Set Up at Site of Relocated Highway
Around Lookout Point Dam

• LATE-SUMMER tourists traveling Oregon's short-cut Route 58 between Klamath Falls, Eugene, and points north were agreeably surprised after August 1 last year. That was the completion date of the Corps of Engineers' major relocation of the highway for about 13 miles around Lookout Point Dam, near Lowell. The last item of work on the new highway was a \$456,125 asphaltic-concrete paving project by Parker-Schramm of Portland, Oreg., under contract to the Oregon State Highway Commission.

Relocation of State Route 58 became necessary when the \$20,000,000 Lookout Point Dam was placed under contract. The 456,000-acre-foot reservoir behind the new earth-fill barrier across the Willamette River's middle fork covers much of the old highway, as well as some county highway and a portion of the Southern Pacific Railroad tracks on the north side of the lake. The Corps of Engineers, in addition to financial help to the Oregon State Highway Department for Route 58's relocation, financed the relocation of 23 miles of railroad and 16 miles of secondary road.

Parker-Schramm's contract provided for installation of a granular subbase and 3½ inches of asphaltic-concrete paving, topped off by a seal coat and chips, and shoulder construction. The asphaltic concrete is being laid in two courses: 2 and 1½ inches thick. The excavation and grade was handled by separate contract prior to the time Parker-Schramm received the paving award.

Fast Highway

The new highway is a better road than the old, with better alignment and improved sight distances, thus making possible higher speeds than before. The subgrade is 40 feet wide, shaped with a straight crown to facilitate positive drainage either to gutters or down the fill slopes. Some 11.7 miles of new grade were established, while the paving contract covered 12.73 miles, partly over the old road.

A 30-foot granular-rock blanket, composed of 3-inch-minus stream-run gravel, was placed 12 inches thick over the subgrade. This was topped by 3 inches of ¾-inch-minus crushed material, laid as a leveling course. The 22-foot asphaltic pavement is centered over the granular material, and shoulder construction is also of gravel and crushed rock. The 22-foot pavement consists of double 11-foot lanes.

Rock Base Built

Construction of the granular subbase moved along rapidly, some of this work being finished in the fall of 1951 after the award of the contract October 1. From a borrow area in the river valley near the

center of the job, a Northwest Model 80-D dragline loaded a fleet of 14-yard Euclids with river-run material. It was hauled to the road, spread according to measured distances for volume, blade-mixed, and rolled by Bros Wobble Wheel pneumatic compactors.

This material was then topped off by the finer ¾-inch-minus crushed material, which was developed by



The hot-plant setup on the Lookout Point relocation project: a Madsen 2,000-pound asphalt plant with rock-production plant in the background.
Ray Day Photo

the same crusher which made the mineral aggregates for the asphalt mix. The finer rock was placed in the same manner, rolled carefully, and topped off by tight blading with a Caterpillar No. 12 motor grader. After the grade was established and

accepted by the Resident Engineer's final check, it was primed for the asphalt pavement by applying 3.25 gallons of RC-3 per square yard. The hot asphalt was trucked in from Standard Oil of California's Portland refinery, and was applied full

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ENGINES

...and cut
fuel consumption, too

TEXACO URSA OIL X** works for you two ways. It 1) lubricates and 2) keeps engines clean. This puts more "push" in your engines by letting full power come through. Same time, it cuts down the fuel you use and slices a healthy amount from your maintenance costs.

Texaco Ursa Oil X** is fully detergent, fully dispersive. Harmful carbon, gum and sludge don't get a chance to form. Rings stay free. Bearings get ace-high protection against wear and corrosion. Texaco Ursa Oil X** will stand up in the toughest service.

In chassis bearings, use Texaco Marjak. Because

it stays in the bearings, your equipment stays out of the shop. And that goes for Texaco Marjak Heavy Duty, too — the long-lasting protection for wheel bearings that needs no seasonal change. More than 500 million pounds of Texaco Marjak have been sold!

To get the most out of your equipment, call in a Texaco Lubrication Engineer. Just contact the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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STAR THEATER
starring MILTON BERLE,
on television
Tuesday nights.
METROPOLITAN OPERA
radio broadcasts
Saturday afternoons.



TEXACO

width (24 feet) at 220 degrees. A Littleford pressure distributor shot the material.

Priming was done just as far in advance of paving as possible, in order to provide a floor for the finishing machine.

The prime coat, after curing out to toughen up, was available only to project traffic: Parker-Schramm's cars, Corps of Engineers vehicles, and the like. The ends of the project were barricaded to all other traffic, which used the old road through the reservoir area.

Crusher and Hot Plant

To produce the sizable tonnage of mineral filler and fine subbase topping, a site was selected about midway in the project where a crushing and screening plant could be set in. This same site was also used for the setup of a Madsen 2,000-pound hot plant, which took its ma-



Here is a Barber-Greene Finisher laying hot-mix asphaltic concrete.

Ray Day Photo

terial directly from the crushing plant.

The crushing plant was a shop-

assembled combination outfit which Parker-Schramm has used in its territory for several years. Dump trucks

hauled pit-run material. Three such trucks, loaded by the Northwest 80-D machine, hauled river-run rock to the crusher trap, where a reciprocating feeder and conveyor put the material through a 2400 Lippmann jaw crusher, driven by a 100-hp electric motor.

From the jaw crusher, the material passed over a Diamond vibrating-screen deck, where dirt and sand was pulled from the mix and wasted through a reject bin. The remainder of the material was sent to a Traylor cone crusher, driven by a 75-hp electric motor. A Symons cone crusher then reduced the material again.

From this point, the material passed to a Simplicity and Symons multiple-deck classifying unit, which was in closed circuit with the cone crushers. Screened rock was classified in three sizes and sent by stacker conveyors to storage piles over a central tunnel, equipped with feeder gates and a conveyor to take the material on to the hot plant. A small Eimco RockerShovel was used at the $\frac{3}{4}$ -inch pile to load trucks hauling to the upper part of the subbase.

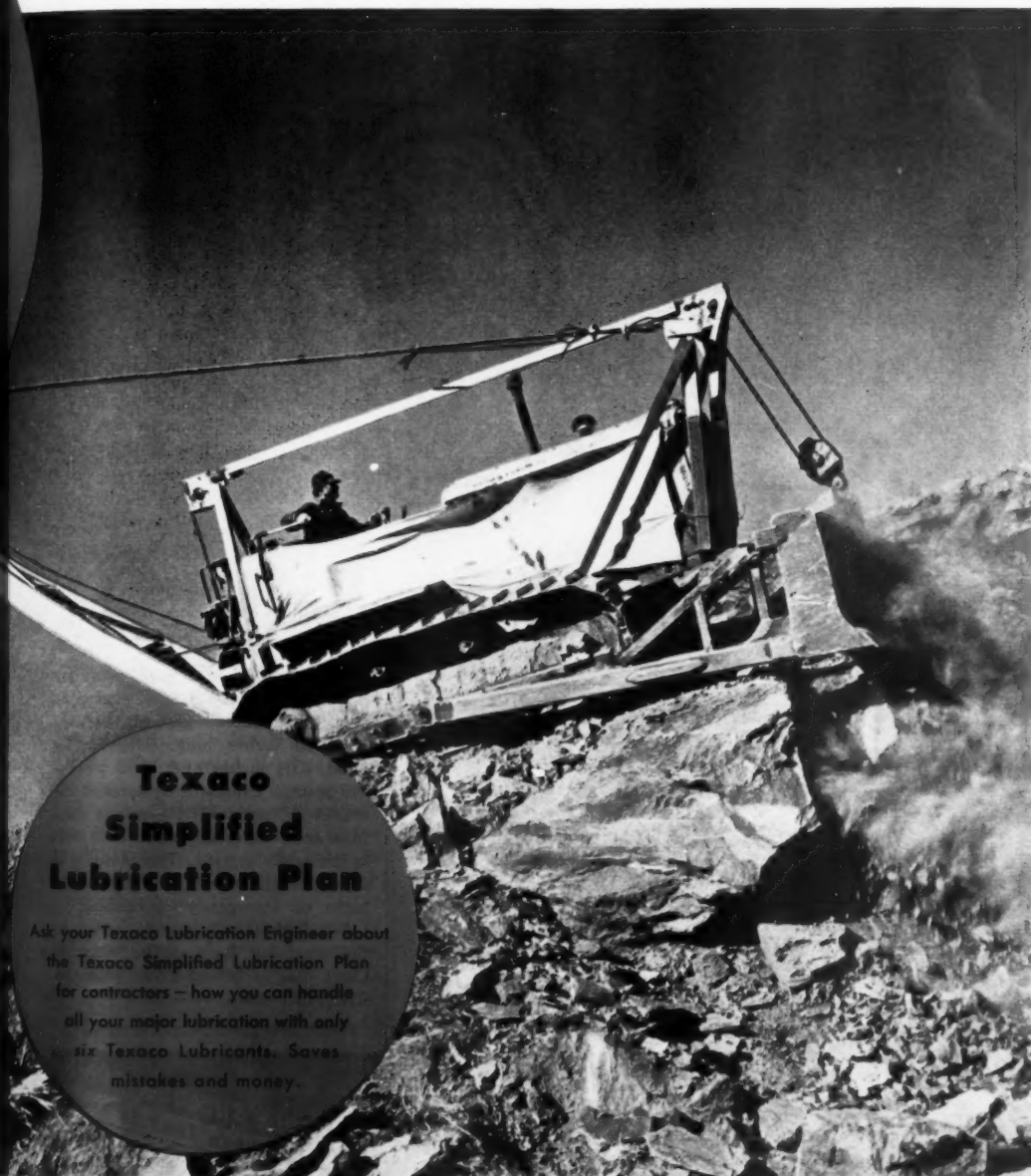
The asphalt plant was a Madsen batch plant, with a 2,000-pound-capacity pugmill. Asphaltic cement of 86 to 100 penetration was trucked in from the Portland refineries of Standard Oil Co., and unloaded to storage by a 3-inch Wisconsin-driven Viking asphalt pump. Two horizontal steam-heated tanks, totaling 17,500 gallons in capacity, were used to hold the bitumen. A small 2-inch Viking asphalt pump was used for circulating the asphalt from storage to the hot pot on the plant, and a 3-inch Viking sent asphalt from the hot pot to the pugmill.

Basic plant equipment included a 100-hp steam generator for heating asphalt and fuel oil, atomizing fuel in the dryer burner, operating pugmill rams, and keeping the hot-heads warm around the Viking pumps. Auxiliary electric power for the asphalt plant was generated by a 75-kw Cummins-driven generator. A Caterpillar D19000-driven generator developed the power to run the rock plant.

The routing of aggregates through the asphalt plant followed standard procedure. Coming out of the tunnel, the rock passed over a long conveyor to the 6 x 24-foot single dryer, where all inherent moisture was removed in 350-degree heat. A hot elevator then raised the material up to a Symons screen deck, where the rock was again re-sized for use in the mix. After a very short period of surge storage in the plant bins, the rock was used in the pugmill, along with the asphaltic cement. Approximately $6\frac{1}{2}$ per cent of asphalt was used in the mix. To guarantee an accurate mix proportion, asphalt and mineral aggregates were both weighed on Fairbanks scales. After a 35-second mix, the asphaltic concrete was ready for delivery by dump trucks to the lay-down crew on the highway. As a rule 5 trucks hauling 7 tons per load apiece could keep the highway crew supplied, even on the longer hauls.

Several features of interest about the plant contributed to its efficiency. For example, a field change

(Concluded on next page)



Texaco Simplified Lubrication Plan

Ask your Texaco Lubrication Engineer about the Texaco Simplified Lubrication Plan for contractors — how you can handle all your major lubrication with only six Texaco Lubricants. Saves mistakes and money.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Asphaltic Concrete Surfaces New Highway

(Continued from preceding page)

by the operator and a mechanic permitted the asphalt valve to be operated with the operator's feet, instead of his hands. Full steam jacketing on pipes and asphalt pumps gave excellent control of a type of asphaltic cement which normally is hard to handle. A master-plant-setup diagram, coupled with the use of flexible-steel pipeline connection links, made it possible to set the plant up in good time.

Just before moving to the Lookout Point job, the plant was set up 75 miles away. It finished that job at noon. The plant was shut down, cooled off, broken down, moved the 75 miles, reassembled, heated up, and started the first batch of hot-mix for the Lookout Point job just



Two Buffalo-Springfield rollers, a tandem and a 3-wheeler (in the background), put the final compaction on the hot-mix.

4½ days after being shut down.

Laydown and Compaction

To keep pace with the production of the plant, it was necessary for

the highway crew to handle about 85 tons per hour. A Barber-Greene Finisher worked to a string line for the first course, laying and partly tamping the material fed to its hop-

per by the delivery trucks. Subsequent courses were laid to the edge previously established.

As soon as the pavement had cooled sufficiently, a Buffalo-Springfield roller of the 3-wheel 10-ton type moved in to make the initial compaction pass. Its work was then completed and its heavy tracks eliminated by a Buffalo-Springfield tandem 8-ton machine, rolling longitudinally with the highway.

The asphalt and chip-seal coat will not be applied until all pavement has been completed.

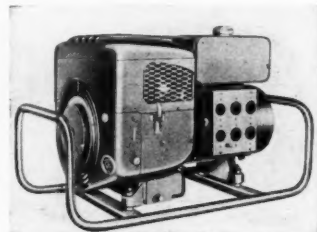
Personnel

The design and supervision of the relocated paving was under the general supervision of R. H. Baldock, State Highway Engineer, with H. G. Smith as Construction Engineer. Tom Edwards is Division Engineer and E. E. Umphlette was Resident Engineer on the project. For Parker-Schramm, W. L. Hart was General Superintendent, with John Copper as Paving Superintendent and Vern Erkenbeck in charge of the asphalt plant.

The asphaltic concrete is Oregon's standard B mix, and is designed for excellent stability and good riding quality. Coupled with a good sub-base and the well drained subgrade put up previously, the new highway should give an excellent account of itself for years to come.

New Electric Plant

A new gasoline-engine-driven electric plant for high-frequency electrical work tools has been announced by D. W. Onan & Sons Inc., Minneapolis 14, Minn. It provides 5,000 watts of ac 230-volt 180-cycle 3-phase power, or 3,000 watts 230-volt 180-cycle ac plus 2,000 watts 115-volt dc.



The portable unit is powered by the lightweight Onan CK 2-cylinder 4-cycle air-cooled gasoline engine. It is 35 inches long; 23½ inches wide; 23½ inches high; and weighs 270 pounds. Standard equipment includes a mounted 4½-gallon fuel tank and a carrying frame. This unit is manually started. The plant will also provide power for lights on night or emergency operations.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 431.

LIMA
604 SHOVEL
1½ YD. CAPACITY

AUSTIN-WESTERN
201 PORTABLE CRUSHING
AND SCREENING PLANT

**"We got more gravel for less money
with this powerful team!"**

...says **CONTRACTOR FRANK ROSSI** of Gardiner, Me.

"By teaming our LIMA shovel with our Austin-Western crusher, we made our own surfacing material for this new section of the Roosevelt trail . . . cutting time and costs by crushing and screening gravel on the job."

Such reports are not surprising when the team-mates on the "production line" are these . . .

LIMA TYPE 604 SHOVEL—A convertible shovel (1½ cu. yd.), crane (30 ton) and dragline . . . very popular for road grading, quarry and gravel pit operations, and diverse construction and material handling work. Its air operated clutches and anti-friction bearings guarantee smooth, quick operation. Streamlined, counter-balanced design assures you greatest capacity per pound of weight.

AUSTIN - WESTERN "201"—Portable Crushing and Screening Plant with high production and low

operating cost. The "201" excels in production because of its high operating speeds and exclusive design features, oversize conveyors and extra-large screening capacity.

THERE'S A LIMA-A.W. TEAM FOR EVERY JOB!

There are LIMA shovels ranging in capacity from ¾ to 6 yards, convertible to cranes with capacities up to 110 tons.

There are Austin-Western crushing plants for any requirement . . . small portable units with single crusher and screen, multiple portable units, or stationary crushing and washing plants . . . each giving you maximum production at minimum cost.

Note: Austin-Western Crushers are now being manufactured in Lima, Ohio, enabling us to maintain steady, top-quality production of crushers.

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SHOVELS • CRANES
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PORTABLE SHELDON PUMP
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SHELDON TRACTOR FILLER CO.
CUNNINGHAM KANSAS

CONTRACTORS AND ENGINEERS

Winch-Head Attachment Is Mixer's Own Hoist

A winch-head attachment that lifts loads to any height has been provided for the Kwik-Mix Model 6-P plaster-mortar mixer. The optional attachment is said to provide sufficient lifting to eliminate the added expense of special hoisting equipment and labor.



The winch head mounts outside the mixing drum and revolves with the paddle shaft. It can be used either on the tilting or nontilt mixer models. It has a lifting capacity of approximately 250 pounds, with the mixer itself as the anchorage. Additional weight can be handled if the mixer is securely anchored or counterweighted.

For further information write to Kwik-Mix Co., Port Washington, Wis., or use the Request Card at page 18. Circle No. 516.

Acidproof Surfacing

A new troweled-on surfacing for concrete that resists solvents, acids, and alkalis is announced by the Ceilcrete Co., 4832 Ridge Rd., Cleveland 9, Ohio. Applied to walls and floors that are subject to corrosive liquids and atmosphere, it is said to make acidproof brick surfacing unnecessary.

Ceilcrete is a combination of synthetic liquid resin, inert fillers, and pigments. It cures into a hard surface with a rated load-carrying strength about four times greater than that of dense concrete, according to the manufacturer. The material is applied in a single layer 1/8 inch thick. It is available in black and other colors.

For further information write to the company, or use the Request Card at page 18. Circle No. 454.

Bituminous Concrete News

At the Eighth Annual Convention of the New York State Bituminous Concrete Producers Association last December, the following officers were elected: President—Frank D. Cooney, County Asphalt Co., Tarrytown, N. Y.; Vice President—Willard A. Terry, Cushing Stone Co., Schenectady, N. Y.; and Treasurer—Avery L. Bullen, New York Materials Co., Fort Edward, N. Y. Directors for the New York State Department of Public Works Highway Districts for the next two years are:

Fred Stutzman (District No. 1), Gil Bruno (No. 3), Dave Rosen (No. 5), Louis Mayersohn (No. 7), and Clarke Fitts (No. 9).

Gus Rayner was re-appointed Executive Secretary, and Joseph E. Myers, Technical Engineer.

One-Man Chain Saw

A new one-man chain saw has been announced by the Strunk Equipment Co., Coatesville, Pa. It is suitable for clearing timber and cutting piles in heavy-construction work.

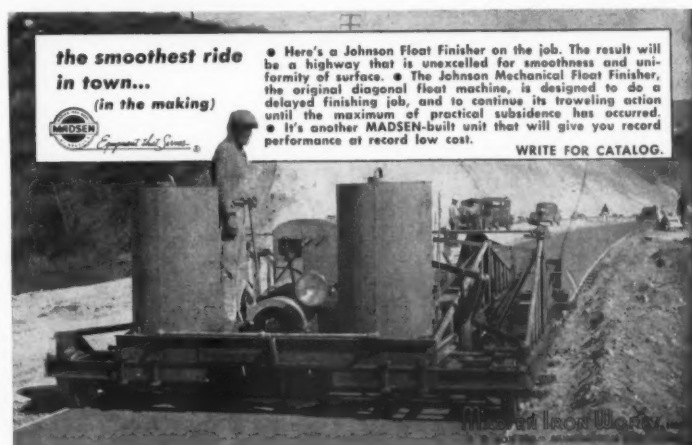
The chain saw is powered by a 3-hp 2-cycle engine. An automatic clutch engages as the engine is speeded. One-finger trigger operates both engine and clutch.

All of the lightweight saw's castings are of aluminum alloys. Lubrication is automatic throughout. According to the manufacturer the saw

is balanced to cut faster with less strain on the operator.

Further information may be se-

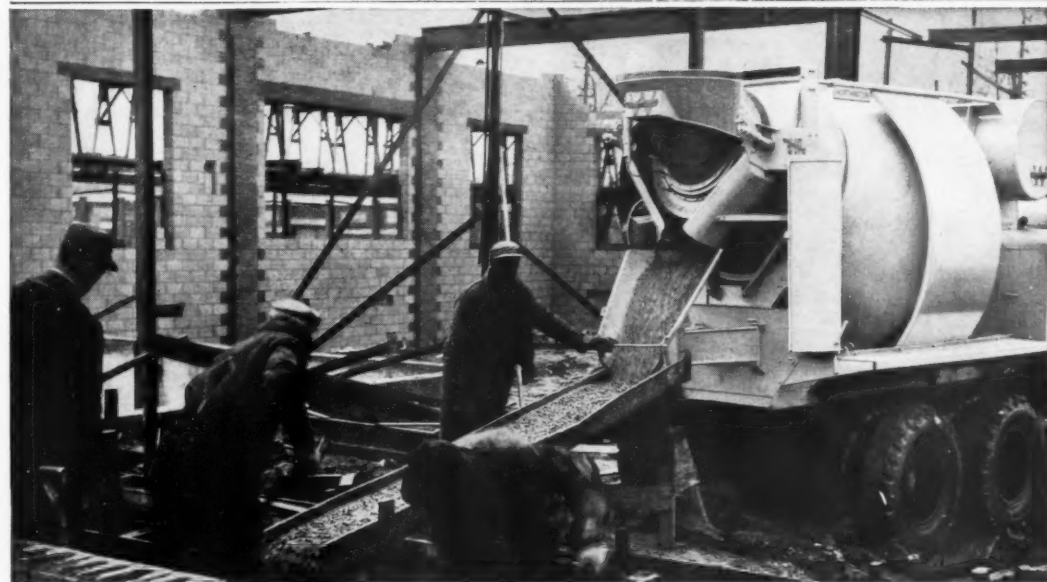
cured from the company. Or use the Request Card at page 18. Circle No. 408.



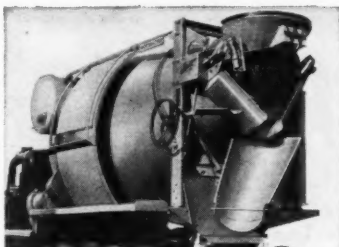
the smoothest ride
in town...
(in the making)

Here's a Johnson Float Finisher on the job. The result will be a highway that is unequalled for smoothness and uniformity of surface. The Johnson Mechanical Float Finisher, the original diagonal float machine, is designed to do a delayed finishing job, and to continue its troweling action until the maximum of practical subsidence has occurred. It's another MADSEN-built unit that will give you record performance at record low cost.

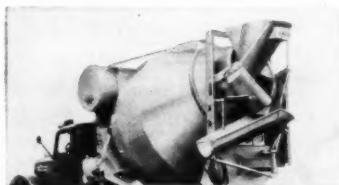
WRITE FOR CATALOG.



Get greater payload capacity with Worthington Hi-Ups



MODEL LC—standard equipment: top hatch loading door, closed end charging door, running boards, side shields. Approximate weight—7100 lbs.



MODEL LO—standard equipment: open end drum with fixed hopper, inspection plate, no side shields or running boards. Approximate weight—6300 lbs.

In Worthington Truck Mixers, engineered weight distribution brings the center of gravity well forward of the rear axle—enabling you to carry the maximum legal payload. Scale weight is held to a minimum, with no sacrifice in strength or operating efficiency.

Rigid factory and field tests assure each Blue Brute user of trouble-free operation and low cost maintenance. All parts requiring attention are readily accessible for easy servicing.

The modern Worthington mixer is available in capacities of 3, 4½ and 5½ cubic yards, with respective agitator ratings of 4¼, 6¼ and 7¾ cubic yards.

Learn more about the Blue Brute Hi-Up—the truck mixer that is the ideal combination of light weight, strength and durability. Get in touch with your nearest Worthington Blue Brute distributor or write Worthington Corporation, Construction Equipment Division, Plainfield, N. J.

R-3-1



If It's A Construction Job, It's A **BLUE BRUTE** Job



New Portable Meter Tests 2-Way Radio Sets

A new portable multi-range volt-meter and milliammeter that makes all the electrical measurement necessary to install and service 2-way radio communications systems is announced by the Engineering Products Department of the RCA Victor Division, Radio Corp. of America. The RCA Type CX-7A test meter measures current, voltage, and comparative radiated power. Several related functions can be checked with a single arrangement of test



leads, providing the equipment tested has built-in metering sockets or

proper point-to-point checking facilities.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 423.

New Welding Helmet

A new line of one-piece plastic welding helmets is announced by the American Optical Co., Southbridge, Mass. The new 700 Series helmet shell is made of thermo-setting Fiberglas reinforced with polyester resin.

The helmet is of seamless construction, moistureproof, and resistant to high heat. It will not warp and is said to be lighter than vulcanized fiber. The surface is smooth and easily cleaned or sterilized.

Headgear for the helmet is made from a new plastic that will not absorb moisture, according to the manufacturer. It conforms to any shape of head for wearing comfort and can be cleaned in antiseptic solution or soap and water. It has free-floating joint suspension with a ratchet-type headgear adjustment and an S-type 4-position adjustable helmet stop.

For further information write to the company, or use the Request Card at page 18. Circle No. 447.

Controls Hoist Loads

A new hydraulic device for positioning and weighing hoist loads is available from Mecfo Sales & Service Corp., Glendale, Calif. It is said to permit the rigger at the load to control the velocity of descent and accuracy of movement within 1/1,000 inch.



The upper eye of the Hydra-Set is hooked to the crane or hoist lifting line and the load is hooked to the lower eye. After the crane operator positions the load a few inches above the desired location the rigger assumes control by operating the needle control valve on the unit. The control valve can also be operated from a distance by a wire cable and spool. When the load is removed, the lower eye automatically springs back into position.

The Hydra-Set is manufactured with capacities up to 20 tons and with or without dial gage to indicate weight of each load. The 20-ton model weighs 100 pounds and can be handled by one man.

For further information write to the company, or use the Request Card at page 18. Circle No. 512.

Concrete-Anchored Bolts

A catalog on anchorings that fasten in concrete and masonry is available from the Super-Grip Anchor Bolt Co., Inc., Philadelphia 40, Pa. It lists specifications and current prices for single and double-anchor bolt assemblies and hook, pipe, eye, and toggle bolts. Tamping tools and masonry drills are also shown.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 503.

Trailmobile Sales Personnel

Fred Rahe, former head of the Sales Management Division of Trailmobile, Inc., Cincinnati, Ohio, has been promoted to Assistant Manager of Fleet Sales, with headquarters in New York City. He has served in various sales and managerial capacities since joining the company in 1938. Finis H. Haskins succeeds him in the Sales Management Division.

CONTRACTORS AND ENGINEERS

New Caterpillar 8SR takes 'dozer-busting rocks in stride



Caterpillar D8 Tractor with 8SR Bulldozer gets out heavy rocks on highway construction job near Hapeville, Ga. Owner is Hugh Steele Construction Co. of Atlanta.

If rocks or other hard-to-handle materials cause high maintenance costs on your regular 'dozers, the Caterpillar 8SR Bulldozer will pay for itself. On really tough construction jobs, the strength of this new, heavy-duty Cat 'Dozer comes into its own. The 8SR can dig in and break loose large rocks, broken concrete shale, and hard clay overburden where other bulldozers fail.

Cutting edge, moldboard and blade ends are heavily reinforced, high-strength steel to resist bending and abrasion. Push arms are extra-heavy. Adjustable braces vary blade pitch for best handling of different materials. Six-line cable, on a choice of front- or rear-mounted control, runs through hardened triple-sheave block for easier blade handling.

The 8SR Bulldozer is designed to team up with the Caterpillar D8 Tractor on your roughest jobs. The

ruggedness and precision of Caterpillar manufacture give long work life and low down-time. A valuable "plus" is fast, on-the-job service from your well-stocked Caterpillar Dealer. He'll be glad to tell you more about this tough new Caterpillar 'Dozer. Give him a call today.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

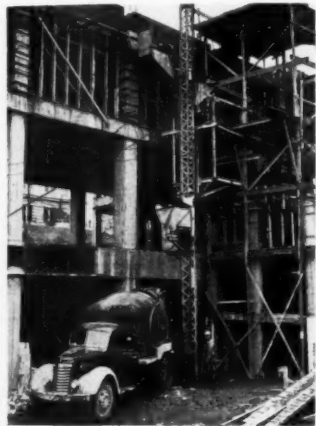
DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

New Building Graces State Capitol Hill

Contractor Erects Steel and RC Frames, Pours Floors, Then Faces Building With Tennessee Marble

A NEW State Library and Archives Building is now nearing completion in Nashville, Tenn. Set high above the side of the city, the new structure is part of a redevelopment program to expand and beautify the Capitol Hill area. Rock City Construction Co., Nashville, Tenn., has the \$2,200,000 contract, which was awarded in May, 1951, and specified for completion by May, 1953. This date will undoubtedly be met easily, since the construction is now running about 4 months ahead of schedule.

The building has an irregular shape, but the plan view is basically in the shape of a T. The structure combines reinforced concrete and a structural-steel frame. The concrete frame is used in the front of the building (cap of the T), which contains the library rooms and offices. The steel is used in the rear for the book-storage areas. An attractive facing of Tennessee marble is car-



Concreting operations centered around this Insley 3-yard concrete hoist. A 4-yard Jaeger truck mixer mounted on a GMC truck is delivering concrete. C. & E. Photo

ried around the front and sides of the cap.

Work started in June, 1951, with the removal of five two-story brick residences previously located on the site. When this was done, McDowell & McDowell, Nashville, subcontractor on excavation, moved in to strip the old foundations and take the hole down to bedrock. They used a 3/4-yard crawler-mounted Lorain-41 shovel and a couple of Caterpillar D7 tractor dozers. The natural ground surface slopes away

from the front of the building at a very steep angle. Excavated material was used for fill behind the building. Six Gardner-Denver jackhammers and an Ingersoll-Rand wagon drill, powered by a G-D 365-cfm compressor, opened up holes to an average 12-foot depth in the rock. Hole spacing was 3-foot on centers in both directions. The contractor used a 60 per cent Hercules powder

(Concluded on next page)



Here is the paving operation for the floors in the rear section of the State Library and Archives Building, Nashville, Tenn. A Mall electric unit does the vibrating. Rock City Construction Co., Nashville, is the contractor. C. & E. Photo

Better Concrete from superhighways to sidewalks is made with DURAPLASTIC*

YOUR NEXT PAVING JOB can prove it! Thousands of contractors, on jobs both large and small, have found that they can get better concrete with Atlas Duraplastic, the original air-entraining portland cement.

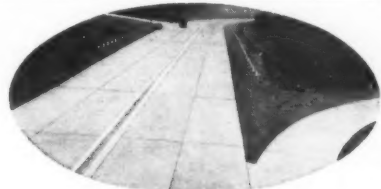
Because the use of Duraplastic cement minimizes bleeding and segregation, the finished concrete is fortified against the effects of freezing-thawing weather and the scaling caused by de-icing salts.

Moreover, Duraplastic is easy to use—no additives, no unusual changes in procedure. Duraplastic requires less mixing water for a given slump. The mix is more workable, more uniform. It dumps, spreads, finishes easily . . . permits finishing closer to the paver and earlier protection for curing.

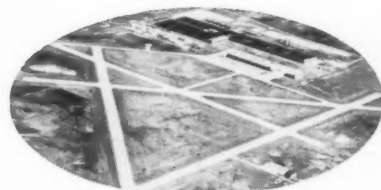
YET DURAPLASTIC COSTS NO MORE

All these advantages are yours simply by specifying Duraplastic. It sells at the same price as regular cement; complies with both ASTM and Federal Specifications. For more information, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.



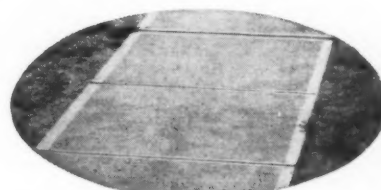
Penn-Lincoln Parkway, Allegheny Co., Pennsylvania. Placed in 1947.



O'Hare Field, Park Ridge, Illinois. Placed in 1942.



Plant paving, U. S. Rubber Co., Eau Claire, Wisconsin. Placed in 1944.



Sidewalk, Babylon, Long Island. Placed in 1944.

TWIN PRIME PUMPS

... Better performance ... Lower cost

DUAL VOLUTES, fast priming, non-clogging portable, long lasting centrifugal pumps. Distributors—write for attractive proposition.

OHLER MACHINERY CO.
WATERLOO 5, IOWA

DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

Makes Better Concrete at No Extra Cost

"THE THEATRE GUILD ON THE AIR"—Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network

CE-D-145

New Building Graces State Capitol Hill

(Continued from preceding page)

for the blast. The reinforced-concrete footings, $3\frac{1}{2} \times 4 \times 2$ feet deep, were cut into the rock with pneumatic drills and hammers.

Rock City formed and placed the concrete with its own crews and erected the steel work. Steel was brought into Nashville from Bethlehem, Pa., by rail and then shipped to the job site by truck. Erection was handled with a Lorain 20-ton mobile crane furnished by Nashville Bridge Co. Steel was bolted together on the ground by 9-foot 10-inch \times 16-foot sections, and then hoisted into position.

Concrete forms were made up on the site. The contractor used $\frac{3}{4}$ -inch oiled plywood except where the concrete is exposed; here they

used a plastic-coated surface. T. L. Herbert & Sons, Nashville, supplied the concrete in 4-yard Jaeger truck-mixers mounted on GMC trucks. Design strengths were 3,000 psi above ground, 2,500 psi below. A 1-yard batch contained a minimum of $5\frac{1}{4}$ sacks of cement and $6\frac{1}{2}$ to 7 gallons of water per sack. Total concrete quantity ran about 4,000 yards.

A $\frac{3}{4}$ -yard Insley concrete hoist provided an efficient means of delivering concrete to the working floor. A Clyde 2-drum hoist driven by a Le Roi engine controlled the load lines. Concrete was taken from the hoist-tower hopper to the forms in wheelbarrows and consolidated by a Mall portable vibrator. Floors were given a wood-float and steel-trowel finish. Forms were stripped in 14 to 21 days depending on the cylinder strengths.

As soon as the forms were clear,

bricklayers and stone setters went to work. The heavy blocks of marble were handled by an Insley K-12 lorry crane. An inclined portable conveyor raised the brick to workmen above the first floor.

H. Clinton Parrent, Jr., of Nashville, was the architect for the new library building. Consulting engineers were: Angus R. Jessup, Structural; I. C. Thomasson, Mechanical; and L. Ralph Bush, Electrical.

C. M. Lancaster, Superintendent, Rock City Construction Co., was in charge of the construction forces. T. N. King, Jr., was Field Engineer for the contractor.

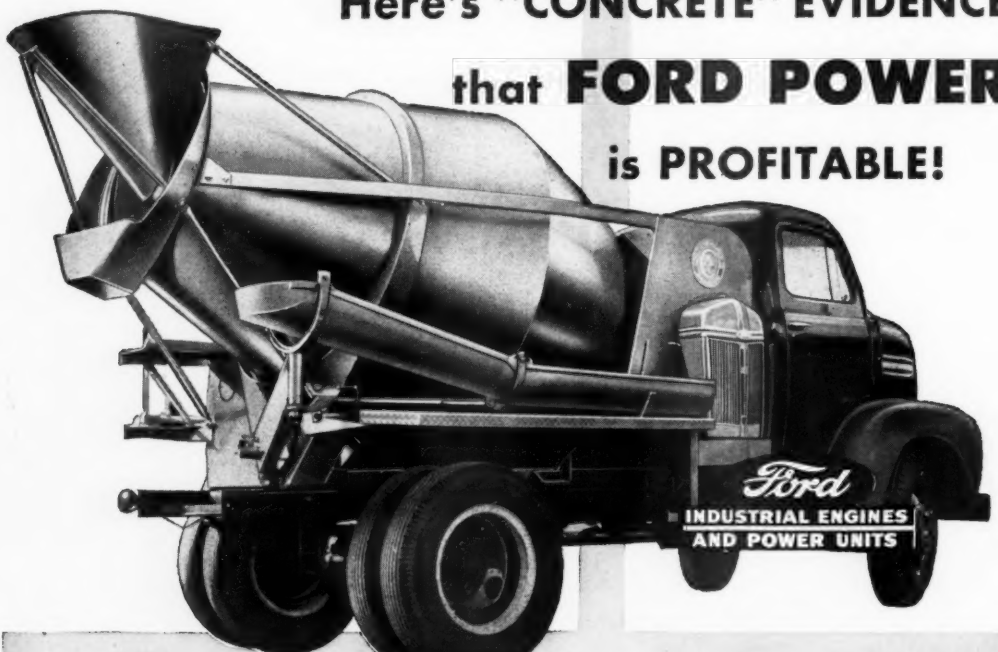
Bulletin on Grommet V-Belt

A grommet V-belt is described in a new bulletin released by Allis-Chalmers Mfg. Co., 951 S. 70th St., Milwaukee, Wis. The Texrope belt is said to be the only one made with-

out a splice. The belt is made by winding rayon cord on itself to form an endless loop. Cross-section illustrations compare the belt with others in the field.

To obtain this literature, write to the company requesting Bulletin 20B6497A, or use the Request Card at page 18. Circle No. 490.

Here's "CONCRETE" EVIDENCE that FORD POWER is PROFITABLE!



6 HEAVY-DUTY INDUSTRIAL ENGINES DESIGNED FOR EFFICIENT, ECONOMICAL OPERATION

FORD'S VERSATILE "120" POWER UNIT

The popular "120" 4-cyl. Power Unit above is also clearly shown in picture at right... chosen by the Construction Machinery Company of Waterloo, Iowa, to power this efficient Transcrete Mixer. A standard Ford Truck Transmission and Differential provide greater efficiency and maintenance economies as well.



Here are some typical FORD-POWERED CONSTRUCTION APPLICATIONS:

Loaders • Crushers • Hoists • Pavers • Air Compressors • Pumps
Cranes • Shovels • Dredges • Backfillers • and many others

Mail Coupon for this interesting material—NOW!

INDUSTRIAL ENGINE DEPARTMENT

FORD MOTOR COMPANY, 13050 Woodward Ave., Highland Park 3, Michigan
We are interested in industrial power for:

(state your application)
Send us 1952 Literature on Ford Industrial Engines checked below:
☐ "120" 4-Cyl. ☐ "215" 6-Cyl. ☐ "239" V-8 ☐ "254" 6-Cyl.
☐ "279" V-8 ☐ "317" V-8 ☐ "MULTA-TORQUE" Converter

FIRM NAME _____ (Please Print)
STREET _____
CITY _____ ZONE _____ STATE _____

• That goes for virtually any type of construction equipment, and for powered machinery in many other industrial fields. There's real profit for manufacturers resulting from Ford's lower engine prices, while actual owners of equipment save money through lower operating costs.

You'll find that few, if any, industrial engines offer you the distinct advantages found or available in Ford's rugged, precision-built, mass-produced series. For example, Ford offers you the **RIGHT POWER** through a choice of 6 **ENGINES** from 120 to 317 cu. in. displacement. The **RIGHT FEATURES** for your application are provided by a complete line of special equipment and accessories. And wherever you are, Ford Parts and Service can be obtained from your nearest Ford Dealer, which means the **RIGHT SERVICE** is assured!

Whatever equipment you contemplate building or using, specify a **FORD Industrial Engine**. Our experienced Sales Engineers are at your service in developing recommendations for the most efficient use of Ford Heavy-Duty Industrial Power in your application. Write for current literature.

**YOUR JOB IS WELL POWERED
WHEN IT'S FORD-POWERED**



YOU GET IN COFFING Safety-Pulls

Extra Safety

You can depend on Safety-Pull Ratchet-Lever Hoists to fully protect men and equipment. They are factory-tested at 100 percent overload. With dual ratchet and pawl, load cannot slip or drop. Hooks are specially designed, alloy steel — will not break or straighten out.

Coffing Safety-Pull Ratchet Lever Hoists
Ten models—capacities from 1,500 lb. to 15 tons.

Low-Cost Maintenance

Heavy-duty construction keeps Coffing Safety-Pulls on the job...out of the repair shop. Hoist frame and handle are certified malleable iron. Sprocket and ratchet are special alloy, heat treated for longer life. These and other construction extras keep Safety-Pulls working under hard, continual use.

For more information on Safety-Pulls and other products listed below, write Dept. C2SP.

COFFING HOIST COMPANY

DANVILLE, ILLINOIS

Hoist-Allys • Mighty-Midget Pullers
Spur-Gear Hoists • Differential Chain
Hoists • Load Binders • I-Beam Trolleys
Quick-Lift Electric Hoists

SOLD BY DISTRIBUTORS EVERYWHERE

2 H.P. UNIVERSAL ELECTRIC MOTOR VIBRATOR



Place Concrete faster!
Light - Powerful
\$297.00 UP FOR CHICAGO
VIBRATORS
WYZENBEEK & STAFF, INC.
222 N. CALIFORNIA AVE. CHICAGO, ILLINOIS

CONTRACTORS AND ENGINEERS

Heavy-Gage Stapler

A new stapler that uses heavier longer staples has been announced by the Arrow Fastener Co., Inc., Brooklyn, N. Y. In general construction it may be used for tacking insulating materials, building materials, and concrete-form linings. The stapler drives staples flush within $\frac{1}{16}$ inch. It loads 125 staples in sizes up to $\frac{3}{16}$ -inch leg length. One-hand operation frees the other hand to hold material being tacked.



The T-50 gun has a non-clogging mechanism that is said to prevent jamming of staples. It permits only one staple at a time to be ejected from the staple track. Working parts dismantle to remove dirt, dust, or grit.

For further information write to the company, or use the Request Card at page 18. Circle No. 458.

Hummel Heads PCA Directors

R. A. Hummel, Chairman of the Lone Star Cement Corp., New York, N. Y., has been elected Chairman of the Board of Directors of the Portland Cement Association, a national organization to improve and extend the uses of portland cement and concrete. He succeeds Smith W. Storey, President of the General Portland Cement Co. and the Consolidated Cement Corp., Chicago, Ill.

Four new PCA directors are: R. D. Raff, President of the Diamond Portland Cement Co., Middle Branch, Ohio; Ellery Sedgewick, Jr., President of Medusa Portland Cement Co., Cleveland, Ohio; Charles E. Shearer, President of Keystone Portland Cement Co., Philadelphia, Pa.; and George E. Warren, President of Southwestern Portland Ce-

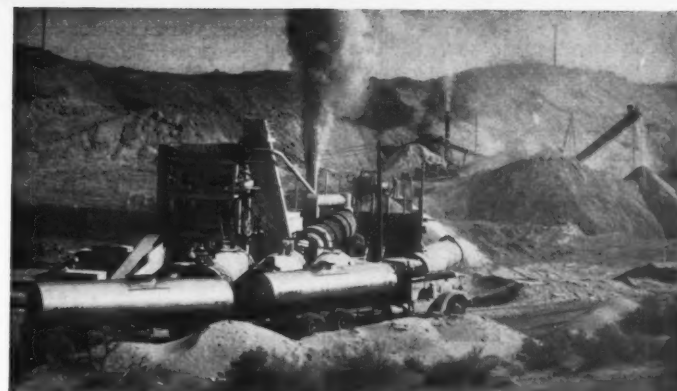
ment Co., Los Angeles, Calif.

The activities of PCA are limited to scientific research; development of new or improved products and methods; technical service; promotion and education; and safety.

Powder-Actuated Tools Approved for NYC Jobs

For the first time powder-actuated fastening tools may be used on all electrical jobs in the New York City area, following a unanimous vote of the Joint Industry Board of the Electrical Industry of New York City. The methods approved heretofore required the use of various hand tools to drill holes in metal or concrete. Sometimes, in the case of concrete, it was necessary to pour fresh concrete and allow bolts to "set" before being secured.

Now, according to Denis J. Crimmins, Executive Secretary-Treas-



A Madsen 4,000-pound asphalt plant in action on the Pasco, Wash., contract held by D-H Paving Co., Vancouver, Wash. Caterpillar diesels supply the power. Crushing operations in the background are by the Curtis Gravel Co. of Spokane.

urer of the joint management-labor group, electrical installations in the New York area will be made at the lowest possible cost to builders and

at highest possible efficiency. Powder-actuated fastening tools permit as many as three or more fastenings a minute to be driven.

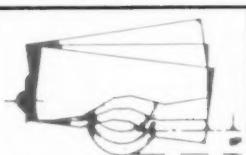
compact heavier lifts with fewer passes



Southwest COMPACTION ROLLER

ON THE BIG JOBS use the Southwest Compaction Roller to keep pace with speedy, 24-hour job schedules and bigger earthmoving equipment. It compacts heavier lifts with fewer passes. Weight-box units oscillate up and down independently to provide a constant compaction weight on each tire regardless of ground contours. There is no bridging, no shifting of load.

The Southwest Roller has flexibility to suit varying job requirements. Weight-boxes may be filled with wet or dry sand, earth, scrap or other materials. Sectionalized hauling yoke permits use of any combination from 3 to 6 weight-box units. Sizes and capacities range from 10 to 200 tons, suitable for light, medium or heavy duty compacting of earth.



Greater Oscillation

Each wheel of the Southwest Compaction Roller is mounted in an independent weight-box unit. Hinge point of wheel is at extreme rear of its own weight-box. Closely spaced wheels give maximum compaction with as much as 12" variance in height. Offers oscillating freedom and greater compaction on uneven ground

Type Soil	Symbol	No. of Single Passes	% Moist	FIELD		OPTIMUM		Ratio
				Dry Density Lbs./Ft. 3	% Moist	Dry Density Lbs./Ft. 3	Passes	
Silly Sand	SM	6	7.3	128.0	8.0	133.6	Pass #4	96.0
Sandy Clay	CL	6	10.2	110.0	15.3	116.2	Pass #4	95.5
Sandy Clay	CL	6	14.3	114.0	15.3	116.2	Pass #4	98.0
Sandy Silt	ML	6	14.6	115.0	14.2	120.8	Pass #4	92.0
Clayey Sand	SC	6	9.2	125.2	10.2	128.3	Pass #4	97.8
Silt	ML	6	6.6	119.0	9.5	125.0	Pass #4	95.0
D.G.	SW	6	8.7	126.7	9.2	132.0	Pass #4	96.0
D.G.	SW	6	5.2	129.0	7.8	135.0	Pass #4	96.0
Straight Clay	CL	6	6.3	122.8	10.3	127.1	Pass #4	96.6
Pit Run	GW	6	4.8	133.5	126.5	7.7	Pass #4	95.0

The above data on unit weight of soil samples has been taken from average compacted fills placed in lifts from six to twelve inches as specified. The unit weight per pneumatic wheel load being 35,000 lbs.

WRITE TODAY for illustrated folder which gives complete data and specifications.

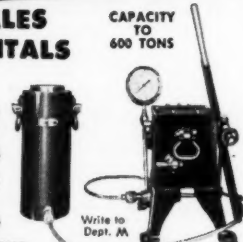


DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR: PILE TESTING, UNDER-PINNING, BRIDGES, PIPE PUSHING, SOIL TESTING



RICHARD DUDGEON INC.

788 BERGEN STREET BROOKLYN, N. Y. ST 9-4040

CONSTRUCTION MACHINERY DIVISION

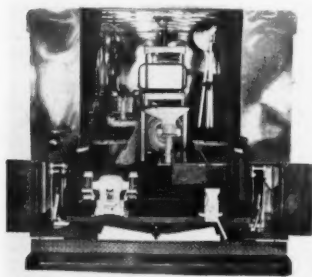
Southwest Welding & Manufacturing Co.

Alhambra, California

HAULING SCOOPS BULLDOZERS LOADERS BOTTOM DUMP WAGONS RIPPERS TAMPERS SCRAPERS TREE DOZERS

Mobile Field Shop

A mobile unit that carries all the equipment necessary for in-the-field service, repair, and maintenance is offered by the Davey Compressor Co., 600 Franklin Ave., Kent, Ohio. Equipment includes a combination welding and ac power generator;



a compressor; oxyacetylene cutting, welding, and brazing tools; and arc-welding accessories. Machinery facilities include a bench grinder, machinist's vise, arbor press, electric drills, and various machinist's tools.

The unit is mounted on a short-wheelbase 4-wheel-drive truck which, according to the manufacturer, will go anywhere a crawler tractor can penetrate. Besides having room for the equipment, the truck provides seating space for 8 passengers.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 417.

Concrete-Joint Seal

A bituminous-rubber compound for concrete-joint sealing has been announced by the Allied Materials Corp., Braniff Bldg., Oklahoma City, Okla. It is a rubbery, resilient, adhesive plastic that adheres to the walls of the joint and expands and contracts with temperature changes. It is said not to lose bond at low temperatures or flow in hot weather.

The sealer is suitable for use on concrete highways, bridges, streets, runways, and ramps. It comes in 50-pound paper bags that are lined with a special plastic compound to prevent adhesion of the material to the paper.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 411.

Weldability of Metals

The answers to how to weld ferrous and nonferrous metals are contained in "Weldability of Metals", a book published by The Lincoln Electric Co. Because of frequent requests for information on how to weld various types of metals, the company has reprinted in this book a section of its standard welding reference volume, "Procedure Handbook of Arc Welding Design and Practice".

The various types of carbon and alloy steels are described by giving nominal chemical analysis, properties, uses, and characteristics, as well as a detailed description of the best welding procedure for each. Similar treatment is given to copper, aluminum, nickel, cast iron, forgings, cast steel, wrought iron, ingot iron, galvanized steel, terne plate, and enameling stock. Also included

are American Welding Society specifications for electrodes used to weld, and a thorough analysis of the principles and practices of hard-surfacing.

Complete with tabular data, drawings, and pictures, the book is available from The Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio. Its price is 50 cents in the United States and 75 cents, postage paid, elsewhere.

Chemical Brush Control

A folder on how to clear a right-of-way with brush killers has been issued by the Thompson Chemicals Corp., 3028 Locust St., St. Louis 3, Mo. The folder deals with three methods: foliage spraying, basal-bark, and stump treatment. Dilution tables for the Thompson's products, Bramble - Weedicide, and Bramblecide, give the number of

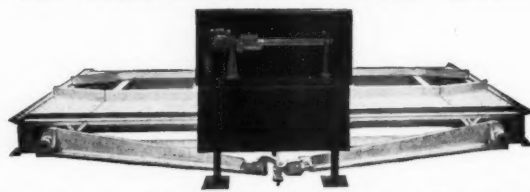
gallons of mixture necessary per mile of right-of-way.

A special report on winter basal-bark chemical brush control is also

available.

To obtain this literature, write to the company or use the Request Card at page 18. Circle No. 484.

WINSLOW-PORTABLE TRUCK SCALE "THE CONTRACTORS' SPECIAL SCALE"

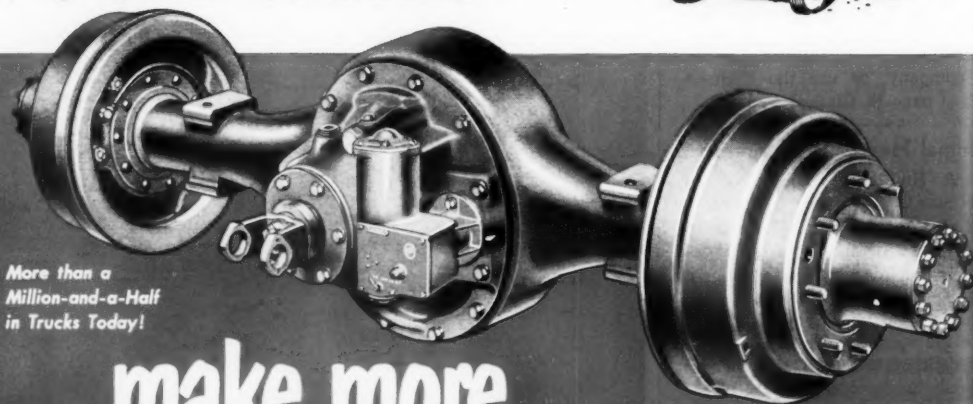
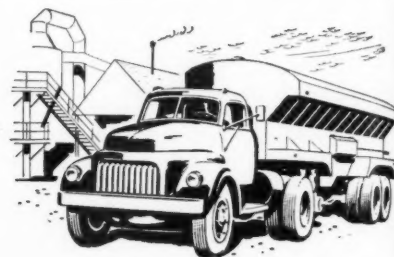


For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacities: 15-18-20-30 tons.

Write us for name of your nearest distributor.

WINSLOW SCALE COMPANY
P. O. Box 1198 Terre Haute, Indiana

Eaton 2-Speed Axle Trucks



More than a
Million-and-a-Half
in Trucks Today!

make more full-load trips, quicker, at lower cost

Quicker trips with no sacrifice of payload. Lower operating and maintenance cost, because engines operate in their best speed range. Less wear and strain on engine and vehicle. More miles in the life of the truck. Higher trade-in value. Eaton 2-Speed Axles will lower your hauling costs for you. Ask your truck dealer to prove it.

EATON

AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND, OHIO



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CONTRACTORS AND ENGINEERS

Airport Expansion Moves Along Quickly

Two Dual-Drum Pavers Lay Down 25-Foot Concrete Lanes at a Rate of Approximately 1,780 Feet Per 8-Hour Day

• **FIRST-STAGE** expansion of the Lambert-St. Louis Airport was off to a good start in the spring of last year. Concrete paving crews of Fred Weber, Contractor, Inc., St. Louis, moved onto the big field May 1 with a \$2,000,000 contract calling for completion of one new runway, extension of another, and construction and extension of taxiways and aprons. Experienced crews and first-class equipment kept the job moving at a fireball pace all the way through.

The airfield is located about 5 miles northwest of St. Louis and is owned and operated by the city through its Board of Public Service. The Board recognized some time ago that increased air travel and St. Louis's growth as a key city demanded expansion of the field's facilities. Improvement of the runway system was the first step.

Included in the contract was a new north-south runway, 150 feet wide x 6,000 feet long, a 2,700-foot extension of the 200-foot-wide east-west runway, bringing its length to 7,800 feet; and construction or extension of four taxiways, each 75 feet wide, for a combined total of 20,000 feet. The total job was 327,000 square yards, 14 inches thick. All of the paving is portland-cement concrete, unreinforced. Paving lanes are all 25 feet wide and slope 3 inches per lane away from the center of the runway or taxiway. The runways are bordered by 50-foot shoulders each side. The shoulder slope varies; in each case, the maximum the terrain will allow to speed runoff.

The average slope is about $\frac{1}{2}$ inch per foot.

Contract Included Some Grading

Most of the grading work had been completed the previous year by McCarthy-Pohl Contractors, Inc., of St. Louis and Nevada, Mo., a joint-venture firm. An additional 32,000 cubic yards of grading was included in the paving contract, however.



Concrete is discharged from a Koehring 34-E Twinbatch paver in front of a Blaw-Knox XC spreader on the Lambert-St. Louis Airport job. C. & E. Photo

since certain areas had to be left open for use as long as possible. Light finishing grading preparatory to paving was required for all areas.

A 14-yard LaPlant-Choate scraper pulled by a Caterpillar D8 handled

the heavy grading in the Weber contract. A Cat No. 12 motor grader followed the scraper, taking the sub-grade down to between $\frac{1}{2}$ inch and 6 inches of the final grade. The

(Continued on next page)

POWERFUL • ECONOMICAL • EASY TO HANDLE



*5 year
Experience*

with HUBER three-wheel roller
leads Charlotte, N. C. to buy another HUBER

CONTRACTORS AND ENGINEERS

"Where To Purchase
Guide"
is now available.

If you wish a copy of this pocket - size booklet of names and addresses of manufacturers and suppliers of hundreds of construction products, circle No. 520 on the reply card to be found in this issue facing page 18 and mail card to

CONTRACTORS AND ENGINEERS

470 Fourth Avenue
New York 16, N. Y.

HUBER Three-Wheel Rollers are their own best salesmen — a big percentage of owners have come back for their second, third and fourth HUBER machines.

Charlotte, N. C., municipal officials bought their second HUBER on the basis of 5-year experience with their first one.

R. A. Robinson and O. B. Torrence, old hands at the operation of heavy equipment, find HUBER 10-Ton Three-

Wheel ideal for their municipal needs. They praise its powerful and economical diesel engine, its year-after-year dependability and its ease of handling.

HUBER Three-Wheel Rollers, available in 8, 10, 12 and 14-ton sizes, are making friends wherever they go. Let your nearest HUBER Distributor tell you and SHOW you the design and construction features that have made them a favorite wherever rollers are used.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.
Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers





The concrete is screeded by a Koehring Longitudinal Finisher. C. & E. Photo

Airport Expansion Moves Along Quickly

(Continued from preceding page)

excess material was bladed over to the shoulder areas.

Weber used over 3,400 feet of 14-

inch Blaw-Knox forms on the job. Trench for the form was cut by hand. The 10-foot form sections were kept at least 400 to 500 feet ahead of the paving. Four workmen set the forms, driving pins—24 inches long in hard subgrade and 30 inches in soft—by hand. The forms were set to a



Left to right on the Lambert-St. Louis job: a Blaw-Knox bin holding stone; a B-K cement bin; and a Heltzel bin holding sand. The crane is a Lorain 820 with a 3-yard Owen bucket. The dozer is an International TD-14. C. & E. Photo

tolerance of $\frac{1}{8}$ inch in 10 feet and coated with Shell light paraffin oil prior to paving. A Cleveland form tamper handled compaction of soil

under the forms.

The subgrade was brought to final finish with a Cleveland Trailgrader riding the forms pulled by an Allis-Chalmers HD-5 tractor with a shovel-loader front. After two or three passes, the operator disconnected the Trailgrader and shoveled the excess material into a pile to be picked up by the scraper. The surface was checked with a scratch template to $\frac{1}{4}$ inch. Forms were then checked with a straightedge. A 10-ton Buffalo-Springfield tandem roller worked on the finished subgrade between the Trailgrader and the paving operation.

Bar assemblies for contraction and expansion joints were brought to the job on a flat-bed truck and placed by two workmen. The assembly was made up of $1\frac{1}{4}$ -inch-round dowel bars, 24 inches long, 15 inches on centers, held in a wire chair network halfway down in the pavement. Each assembly was $12\frac{1}{2}$ feet long. The contraction joints were spaced 20 feet apart. The expansion joints, similar in design except for a $\frac{3}{4}$ -inch cork board down their length, were spaced 400 feet apart. Another workman, meanwhile, set dowel bars, 30 inches long, 30 inches apart, on high chairs for the longitudinal joint. The actual joint, $3\frac{3}{4}$ inches deep by $\frac{3}{4}$ inch wide, was cut by a Flex-Plane machine after the pour. All joints were filled with 85 to 100 penetration asphalt after the concrete had set and cured.

Batching Plant

Weber's batching plant was designed for fast production. Modern equipment and smooth material-flow

WINDROW CONCRETE SLABS FASTER—CLEANER—CHEAPER

with

FLECO

Reg. U. S. Pat. off.

ROCK RAKE



Tested by Dural Engineering and Contracting Company on Atlantic Boulevard, Jacksonville, Florida.

PROBLEM

Remove 4 lanes of concrete 6" to 8" thick without disturbing fill dirt or interrupting traffic.

TOOLS

Diesel D7 equipped with 10-tooth FLECO Rock Rake.

RESULTS

After a 3,900 lb. tear-drop hammer fractured the pavement, 100 linear feet of 4-lane concrete slabs were ripped and windrowed per hour by the D7 equipped with FLECO Rock Rake.

It was found that the hammer could be dropped at 10 foot intervals and the windrows were free of fill dirt, resulting in full pay-load hauls in the removal operation.

FLECO CORPORATION

Manufacturers of the FLECO Rock Rake, Root Rake, Detachable Stumper, Brush Rake, Tree Cutter, Treedozer, Undercutter & Accessories
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CONTRACTORS AND ENGINEERS

470 Fourth Avenue
New York 16, N. Y.

CONTRACTORS AND ENGINEERS

lines insured that the paving crews would have no waiting time. To obtain the shortest average haul distance, Weber located his plant just a few hundred feet from the intersection of the two runways to be paved.

The plant consisted of three batching bins positioned on line so that the batch trucks could drive directly under each. The bins were 100-ton 2-compartment units. The first, a Blaw-Knox, contained 2-inch limestone in one compartment and 1½-inch stone in the other. The second bin, also a Blaw-Knox, held 400 barrels of bulk cement fed up to the top of two Blaw-Knox screw conveyors. The third bin, a Heltzel, held Missouri River sand.

Materials stockpiles were alongside the batching bins. Weber kept about 20,000 tons of each size stone and the sand on hand. A Lorain 820 carrying a 3-yard Owen clamshell in 50 feet of boom handled the coarse aggregates. A Lorain 41 with a 1½-yard Blaw-Knox clam on 50 feet of boom charged the sand. The stockpiles were shaped by an International TD-14 tractor loader.

Limestone for the job was taken from Vigus Quarry about 7 miles from the job and brought in by hired trucks. The sand was supplied by St. Charles Sand Co. and St. Louis Sand Co. in 4-yard dump trucks. Cement was delivered by rail as far as Robertson, Mo., and then trucked to the plant. The trucks were 9-ton Macks and Autocars. They rode up a slight ramp to dump their loads into a 35-ton hopper. An undercar unloader carried the cement over to the screw conveyors.

Weber kept about 20 batch trucks to feed the pavers—the exact number depending on how close the paving operation was to the plant. The dump bodies were split across the middle by a gate so that each could carry two 37.4-cubic-foot batches. Any material was weighed with Kron dial scales. A typical 37.4-cubic-foot batch contained 755 pounds of cement, 1,687 pounds of sand, 1,524 pounds of 1¼-inch stone and 1,247 pounds of 2-inch stone. The water, 48.2 gallons (6 gallons per sack of cement), was added at the pavers.

Paving Operation

Weber kept two Koehring 34-E Twinbatch pavers at work on this job. Both worked outside of the forms riding on the subgrade when placing the first lane of a runway and on a rubber belt when riding on a previously placed slab. The dual-drum pavers had a 35-foot boom, making all areas within the form easily accessible. Trucks backed into the paver skip and unloaded one-half load at a time (each a 37½-cubic-foot batch). A piece of steel hung on a cable halfway down the skip served to shake free any clinging cement. A plate welded to the skip at the "banging" point kept the bottom from being worn out before its time.

Water for the pavers was taken from a nearby county hydrant and delivered through 600 feet of 4-inch hose to a 4,500-gallon horizontal storage tank, then fed through gravity lines into 2,000-gallon tanks mounted on heavy-duty trucks. There were four of the truck tanks, two serving each paver. They were

fitted with 200 feet of 2-inch hose leading from the tank to the paver. Mixing cycle on the job was one batch per minute.

The batches were dumped directly on the subgrade. The pavers were followed by a Blaw-Knox XC spreader, a Blaw-Knox XC double-screed finisher, a Flex-Plane joint machine, and a Koehring Longitudinal Finisher, in that order. Hand work included long-handle floating and canvas-belt finishing at the end of the line.

Hunt Process Clear curing compound was sprayed in by two Hudson hand sprayers. Forms were stripped the following day, cleaned, oiled, and set ahead. A Cleveland

pin puller eliminated the manual removing of pins. Weber poured the center runway lane first and then alternated the lanes on each side.

Average production was 1,780 linear feet per 8-hour day.

Personnel

Average construction force on this job was 75 men. Fred Weber, Jr., directed the work personally. Supervisory personnel for the contractor included Charles Busbie, General Superintendent, and Fred Sauer, Subgrade Foreman.

Jack Powers, Resident Engineer, Board of Public Service, represented the City's interest on the job. The project is under the direction of Guy

Brown, Chief Engineer of the Division of Sewers and Paving; and Harold Horan, Assistant Chief Engineer. Frank J. McDevitt is President of the Board of Public Service.

Folder on Wheelbarrows

A folder on wheelbarrows has been issued by the Lansing Co., Lansing, Mich. It lists tray size, volume, and weight of seven general-purpose and concrete models. These have a deep tray to hold concrete without slipping.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 401.



JOPPA, ILLINOIS, PROJECT OF ELECTRIC ENERGY, IN TO SUPPLY POWER FOR ATOMIC ENERGY COMMISSION PLANT, PADUCAH

MAXON CONSTRUCTION CO., Dayton, Ohio, has purchased 40 Lorains. Here, two Lorain Cranes, Model 820-J, are on the Joppa job — erecting steel and concrete forms, placing concrete for water intake and exhaust structures.



EBASCO SERVICES, Inc., New York City, prime contractors on the huge Joppa project, use two Lorain Cranes, Model 820-J, to erect one of the many structures. Ebasco has purchased 11 Lorains.



EDGAR STEPHENS & SONS, Inc., Cairo, Illinois — a 5-time Lorain owner — supplies concrete for the project. These two 1-yd. Lorain Clamshells, Model 50-K, on 14 ft. long crawlers, unload, stockpile materials and charge a 30-yd. bin.

SAMUEL KRAUS CO., St. Louis, Missouri, has 3 of their 4 Lorains on their 1,000,000 cu. yd. earthmoving contract. A 20-ton Lorain Motor Crane is shown unloading cars.

18 LORAINS HELP BUILD NEW 1,300,000 K. W. \$56,000,000 POWER PLANT

Big jobs — big names — and Lorain shovels go together. Here, in the making, one of the world's greatest centers of electric power. Located on the north bank of the Ohio River, the big Joppa project will put forth 1,300,000 kilowatts that will feed the vital \$700,000,000 Atomic Energy Commission plant across the river at Paducah. Two mammoth generating stations are being built — and Lorains are scattered all over the job.

It's a big job — all the way. Big name contractors are at work. Four of them moved 18 Lorains to handle a wide variety of jobs. These four Lorain owners, named in the photographs, have purchased a total of 60 Lorains.

Big jobs — big names — and Lorains go together — for reasons you would expect. Dependability through quality design. Selection to answer every job need. Experience that has proved Lorain performance. Big jobs — or small — these same reasons will put you to check with your Thew-Lorain Distributor for your very next shovel-crane need.

THE THEW SHOVEL CO.
LORAIN, OHIO

THE
LORAIN

Portable Compressors

Three new portable compressors, 105 cfm, 210 cfm and the 105 Pneumatractor, are announced by Schramm, Inc., West Chester, Pa. The Dezoil engine-driven compressors are said to provide low initial cost and fuel economy. They differ from the gasoline-engine-driven units only in that the diesel fuel is injected into the cylinder by means of the American Bosch injector system.

These units have the Pneumastat, a fuel-saving control that automatically regulates the compressor speed in keeping with the air demand from one-half load to full load.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 500.

N. J. Renumbers Highways

With 2,500 improved route markers, New Jersey began the year by renumbering its state highways for the first time since the system was revised in 1927. The new route numbering resulted from a long study by specialists and is in conformity with the latest national practice. It has also been reviewed by state and Federal agencies, automobile and trucking associations, oil companies, and map makers.

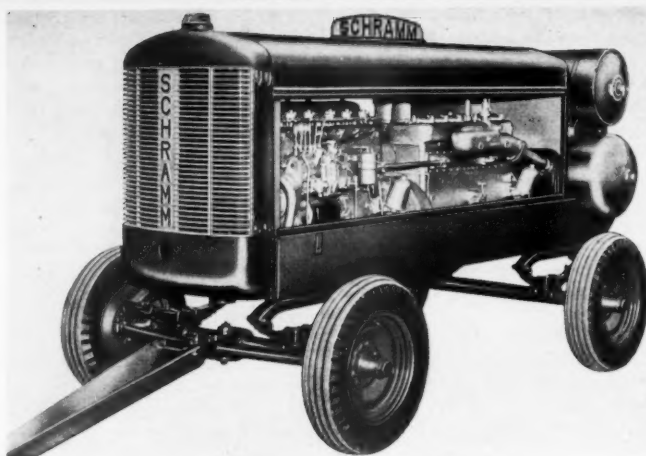
The plan is based upon the following considerations:

1. No state highway with a U. S. number now carries a separate state designation.
2. No number assigned to a U. S. route is used for a state route.
3. Overlapping of route numbering along a single highway is reduced to a minimum.
4. State highways are now continuously marked with the same number along the line of greatest traffic flow.
5. With the exception of U. S. 9W (a Federal-route designation), no letters appear on route markings.
6. Where New Jersey routes join New York and Pennsylvania highways, common numbers have been assigned.
7. Where consistent with the above conditions, former state route numbers remained unchanged.
8. The Garden State Parkway, the New Jersey Turnpike, and the Palisades Interstate Parkway do not have numerical designations.

Due to the shortage of critical metals, the State Highway Department is using the old route markers on highways where the old number has not been changed. When restrictions are lifted, the new-type marker will be installed on these routes.

Gar Wood Industries News

Gar Wood Industries, Wayne, Mich., together with its 19 plants and factory branches, now totals 1,320,000 square feet in manufacturing, warehouse, and office space. The Wayne, St. Paul, and Richmond Divisions, as well as the company's National Lift subsidiary, manufacture truck equipment. This includes hoists and dump bodies, refuse-collection bodies, truck winches, cranes, and elevating tailgates. The Findlay Division of Gar Wood makes construction and road-building equipment, including power shovels and cranes,



The Schramm Dezoil engine-driven 210-cfm compressor.

ditchers, bulldozers and tractor-drawn scrapers, material spreaders and R-B Finegraders. Another Gar

Wood subsidiary, United Stove Co., builds the Savoile line of fuel oil and kerosene space heaters.

Bulletin on Asphalt Plant

A brochure describing its RB Series asphalt plant is available from Standard Steel Corp., 5007 S. Boyle Ave., Los Angeles 58, Calif. Like previous models it is built on the unit principle for convenience in erection and dismantling. Dryer capacity, elevators, vibrating screens, and air-handling system are discussed.

Improvements illustrated in the brochure include: a safety backstop in case of power-service interruption; a sectioned mixer lining to make possible replacement of only a small section in case of wear; centralized controls for easier one-man operation; and individual electric-motor and gear-motor drives. The RB comes in 500 to 6,000-pound batch capacities.

To obtain this literature, write to the company or use the Request Card at page 18. Circle No. 488.

**Mobile
CONCRETE
MIX PLANT**

21-FOOT discharge
(HIGHER WITH SPECIAL BOOM)

KOEHRING 16-E *twinbatch.*

with 6 m.p.h. rubber-tired mobility and high elevating boom, has unlimited application on all types of concrete construction work . . . for buildings, retaining walls, pilings, culverts, bridges, tunnels, widening highways and airport strips, batching into trucks, etc. Bucket rides on 60° elevating boom . . . discharges controlled batch into overhead forms, hoppers or chutes at a dumping height of 21 feet (higher with special boom). Boom also swings in an arc of 160° . . . speeds pouring of floors, foundations. This

heavy-duty 16-E easily mixes and distributes up to 50 cu. yds. per hour. 7-second skip hoist, split-second Autocycle mixing controlled by Koehring Batchmeter, and vertical syphon-type water tank, all assure consistent, maximum-strength concrete at top batching speeds.

Productive work-time is increased because mobile, rubber-tired 16-E works over pavement without planking, makes self-powered moves job-to-job at 6 m.p.h. Get more facts from your Koehring distributor, or write for literature.

KOEHRING CO., Milwaukee 16, Wis.
(Subsidiaries: JOHNSON • PARSONS • KWIK-MIX)



KOEHRING 16-E *twinbatch*

PAVERS • FINISHERS • CONSTRUCTION MIXERS • CRANES • EXCAVATORS • DUMPTERS • MUD-JACK

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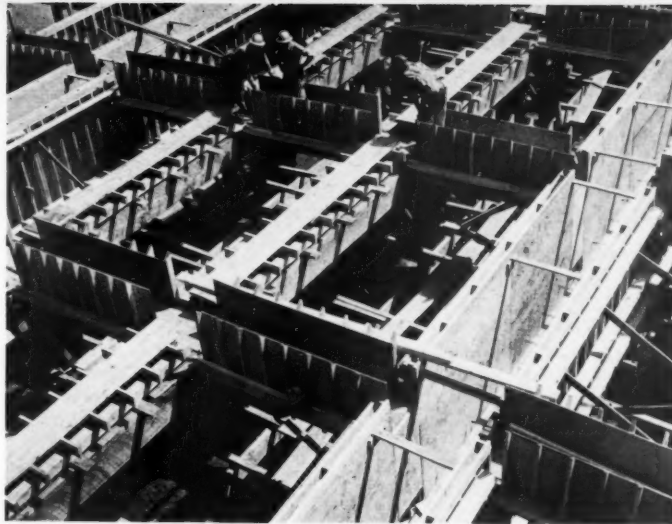
Reusable Forms

Speed Viaduct Job

Standardized reusable plywood form sections (some of which were used ten times), helped complete the \$3.6 million double-deck center section of the Alaskan Way Viaduct, Seattle, Wash., several months ahead of schedule. So say the joint-venture contractors, Morris-Knudsen Co., Inc., and Rumsey & Co.

A typical section of the viaduct consists of a 3-span rigid-frame unit with split columns at the end of each unit. The reinforced-concrete deck is supported by two exterior girders up to 9 feet high and two interior girders of varying depths with a shallow center beam. Cross beams were placed at the columns and at intermediate points on centers averaging about 14 feet.

Since the beam and girder depths and roadway widths vary consider-

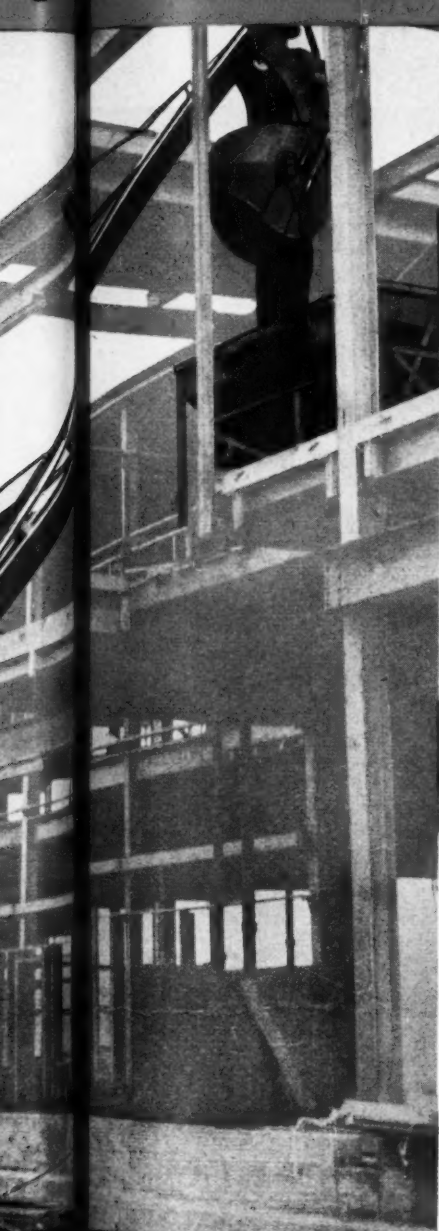


Pattern of plywood forms for girders and cross beams. Standard panels for shallow cross beams and shallow center beams were not as high as those for girders.

ably throughout the 6-lane highway structure, a complex form problem arose. This problem was solved with a system of standard-size reusable form panels for girders and pans devised to accommodate "floating beam bottoms" to handle variations in beam and girder depth and shape. For the exterior and interior surfaces of the girders and the interior girders and beams, the contractor used $\frac{5}{8}$ -inch plywood vertical panels nailed across studs on 12-inch centers. Double wales braced the panels, which were held in position by patented form ties. These standard panels were supported on joists laid across three or four stringers placed side by side and the vertical panels were clamped solidly into place on the joists with nailing blocks. To bring the floor of the form to the varying depth of the beams and girders, the contractor built a false bottom inside the vertical forms at heights and angles conforming with the design of the structure.

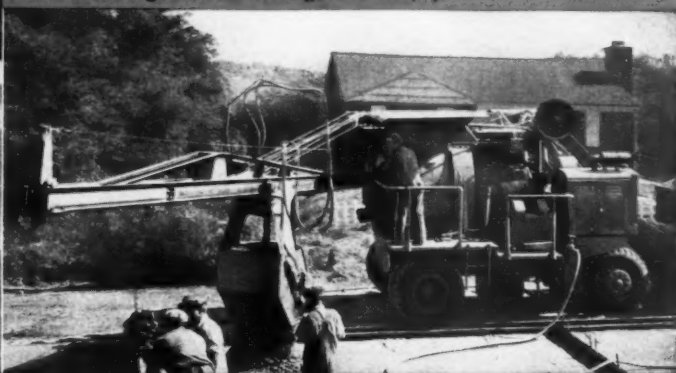
Pan forms for the roadway slab were also in standard sections and consisted of exterior fir plywood laid across joists spaced to conform with

Large height



CONTROLLED-DISCHARGE BUCKET

has clamshell-type door, hydraulically controlled... can be opened or closed at any time for gradual discharge. 24 cu. ft. water-level capacity is more than ample for the full 16 cu. ft. concrete batch, plus 10% overload.

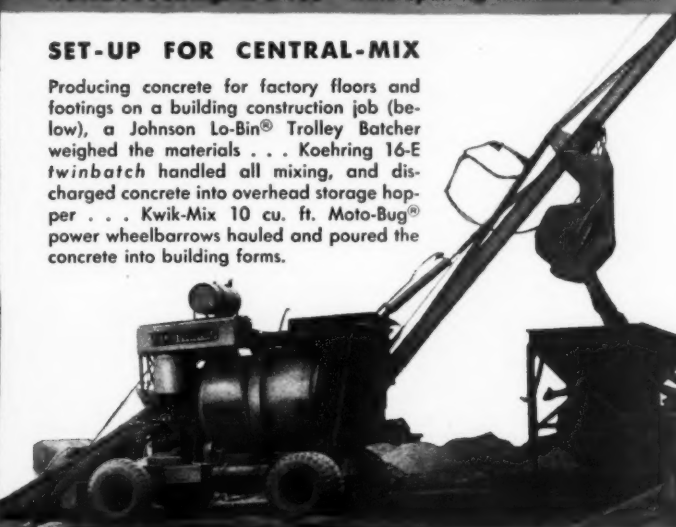


BOOM SWINGS IN 180° ARC...

... double-channel distributing boom on the Koehring 16-E twinbatch is power controlled... swings in a 180° arc, elevates 60°... is self-locking and holds securely in any position for accurate spotting and discharge.

SET-UP FOR CENTRAL-MIX

Producing concrete for factory floors and footings on a building construction job (below), a Johnson Lo-Bin® Trolley Batcher weighed the materials... Koehring 16-E twinbatch handled all mixing, and discharged concrete into overhead storage hopper... Kwik-Mix 10 cu. ft. Moto-Bug® power wheelbarrows hauled and poured the concrete into building forms.



"Floating beam bottoms" were beam and girder-bottom forms built up inside the standard vertical form panels.

stud spacing on the vertical form panels. The contractor began by laying starter panels for chamfer strips first to form the bevel in the design of the beams and girders. The remainder of the pan form was placed with standard sections and completed with a shiplap filler section.

Falsework, placing of forms, and pouring of concrete were carefully synchronized to keep the job moving. Usually the contractor built enough formwork for three spans or 660 feet at a time. The only finishing work required was filling of tie holes and beads, which were ground and sacked. Douglas Fir Plywood Association, Tacoma, Wash., supplied the plywood.

Concrete Forming Tables

A new 4-page folder of tables on the erection of concrete form work for slabs, columns, and beams has been released by the Symons Clamp & Mfg. Co., 4251 Diversey Ave., Chicago 39, Ill.

The tables give information on spacing the following: girts or stringers when using the company's panel forms; joints and girts when using $\frac{3}{4}$ -inch plywood for forms; shores; and column clamps.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 462.

Ask, too, about production advantages of big 34-E twinbatch and Longitudinal Finisher for highway, airport, other major paving jobs.

Culvert, Bridges in U. S. 40 Relocation

Three Water Crossings on 5½-Mile Section in Illinois Take Highway Over Meandering Streams

• THE modernization of 5½-miles of U. S. 40 between Martinsville and Marshall, Ill., not only involved all new location, but also the construction of one large culvert and two reinforced-concrete-deck continuous-girder bridges at a contract price of \$280,000. Standard Paving Co., Chicago, Ill., general contractor for the Illinois Department of Public Works and Buildings on this important transcontinental-highway project, had a problem catching the small meandering streams.

The culvert is at Station 3139 where U. S. 40 crosses Auburn Branch. It is a conventional job of reinforced concrete 256 feet long with each of the two boxes measuring 8 feet x 10 feet 6 inches. The second job in the project is a reinforced-concrete-deck girder bridge. It has two spans 57 feet 3 inches

ed material in the channels adjacent to the new bridges, the contractor's plan was to make the double-handled material as small a quantity as possible by trying to keep the cofferdam construction ahead of the channel

excavation. Since the excavation from inside the cofferdams was a relatively small amount, it was of little moment to pick it up for the second time or doze it. Of course the trick was to keep all units busy, since a waiting dragline costs money. At the time the job was visited, the various operations had been dovetailed nicely so that everything was working without overlap.

Sheet-steel piling for cofferdams was driven with a drop hammer slung from the 50-foot boom of a ¾-yard Unit crane. The cofferdam was partly unwatered with 3-inch Jaeger and 4-inch Gorman-Rupp pumps, and then the crane was changed to a clamshell hookup and

the sand was excavated to the bottom elevation for the footing forms. There is 4,160 linear feet of untreated timber piling in the job up to 30-foot lengths; 1,920 feet of 24-foot, and 2,240 feet of 28-foot. These piles were also driven with crane and drop hammer. Untreated timber piling was used, too, alongside completed piers and abutments as support for the deck and girder forming.

Most of the cofferdams were 39 x 80 feet. The forms for the footing were made with plywood facing nailed to 2 x 4 studs and most of the panels were usable with but little carpenter revision. After footing forms were completed the cofferdam



A Unit crane with clamshell excavates a cofferdam. A Jaeger 3-inch pump does the unwatering.

long and one span 74 feet 6 inches long, and is located at Station 3185 where the new route crosses Mill Creek. The third job is a similar structure at Station 3300 where the new route crosses East Mill Creek. This bridge consists of two spans 38 feet 3 inches long and one span 49 feet 9 inches long.

All the activity was in the general location known as Clark Center. There small streams wander considerably and flood badly in wet weather. Consequently, one of the important considerations was the channel changing, straightening, and deepening. This portion of the highway drains some 1,000 acres of rolling woodland and cultivated land. Therefore control of the water, by revising the channels where the highway crosses, will eliminate future trouble.

The contract included 2,807 square yards of slope walls and tree removal from 1.65 acres. The trees ranged from 6 to over 15 inches in diameter.

Cofferdam Construction

In order to avoid the possibility of double or triple handling of excavat-

THINK BIG...

WHEN YOU

BIG CAPACITY

BIG PROFIT

BIG PERFORMANCE

THINK CEDARAPIDS.

for higher percentages
of secondary crushing and
greater screening capacity

THE COMMANDER

Here's a plant that averaged 350 tons per hour of 1" material with 20% crush on a job in Minnesota. In another pit, the Commander produced 445 tons of ¾" material per hour with approximately 12% to 15% crushing! That's the kind of output that lets you *think big* about aggregate production and profit.

The Cedarapids Commander was designed specifically for producers who need greater output of fine-crushed products, or whose pit conditions put a bigger load on the secondary crusher. The big 30" by 22" roll crusher increases secondary crushing capacity by approximately 50% and steps up the stage of reduction.

To balance out this greater roll crusher output, the large 48" x 10' two-and-a-half deck horizontal vibrating screen provides 30% more screening capacity for the plant. The feed conveyor, delivery conveyors and under-crusher conveyor are 30" wide to handle the higher capacity of the plant. Best of all, *maintenance and operating costs are as low as on other Cedarapids plants!*

The Commander is loaded with other big production features. Ask Commander owners for facts and figures or see your Cedarapids distributor for complete details.



IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.



MASTER TANDEM
Here's the biggest all-around gravel producer in the Iowa line. With a 10" x 36" jaw crusher, 40" x 22" roll crusher and 48" x 12" screen, the Master Tandem is really the master of low-cost, big volume production on a wide variety of crushing and screening jobs.

PITMASTER
This is the plant you'll want for smaller jobs. The Pitmaster's 10" x 16" jaw crusher, 16" x 16" roll crusher and 30" x 9'5" screen assure excellent production and extremely economical operation. For pits with a higher percent of oversize, ask about the Twin Jaw Pitmaster.



DOUBLE IMPELLER IMPACT BREAKER
When you need cubical shaped aggregate in tremendous volume, check the performance records of this impact breaker. On one job, the big Model 5050 established a peak production record of 724 tons per hour. Exceptionally low-cost operation assures a high return on your investment.

was thoroughly unwatered before pouring. Usually two pumps were used.

Channel Excavation

Excavation for channel changes and deepening was required at each bridge, and this, along with the excavation for bridge piers and open abutments, amounted to a total of 24,025 cubic yards divided up as follows:

Type of Excavation	Quantity
Class A, for structures	1,157 cu. yds.
Class B, for structures	747 cu. yds.
Channel	13,200 cu. yds.
Earth	8,750 cu. yds.
Rock, for structures	168 cu. yds.

Concrete Handling

One of the problems was concrete

supply and that was solved in a permanent and satisfactory way. A transit-mix plant was set up and later two 3-yard Willard transit mixers on Ford F-6 trucks completed the concrete-mixing equipment. A Winslow 40-ton Binabatch with two compartments was erected on the site. Concrete had previously come from an independent supplier but the long haul was a serious factor in getting precisely timed delivery. Now the contractor was able to supply the next forms with his own transit mix.

Concrete was mixed 6 bags to the yard and the coarse aggregate was graded from 1½ inches down.

The transit mixers and their

troughs were used for direct pouring of footings and all substructures. For the higher jobs the mixers delivered to a ¾-yard concrete bucket which was handled by the cranes. Since there were two cranes on the project pouring took place on both jobs by shuttling the transit mixers.

Besides the Unit crane, there was a ¾-yard Koehring with a 60-foot boom, which was engaged principally in deepening and widening the channel. Except for the immediate bridge areas, the same crane that did the job with a dragline bucket dumped the spoil on the banks.

A further item in Standard Paving's contract was 12,370 square



Fills were dozed on in small lifts and compacted by Thor tampers.

yards of compaction. These fills were mostly bulldozed by an International TD-14 and an Allis-Chalmers HD-5 and bladed in shallow lifts, which were then compacted with Thor air tampers supplied with air from a 110-cfm Le Roi air compressor.

Quantities and Personnel

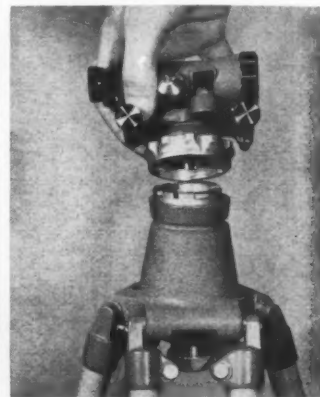
Some material quantities were as follows:

Concrete	2,078 cu. yds.
Reinforcing steel	274,100 lbs.
Structural steel	29,250 lbs.
Metal guardrail	614.5 lin. ft.

Ben Harrison was Superintendent for Standard Paving on the structures. Chas. P. Casey is Director of the Illinois Department of Public Works and Buildings and F. N. Barker is Chief Highway Engineer. N. E. Sprague is District Engineer of District 5 at Paris, and Ed Bryant is Project Engineer.

Swiss Optical Level

A new Swiss surveyor's level that has a ball-and-socket joint instead of foot screws is available from the Kern Surveying Instrument Division of Paul Reinhart Co., 66 Beaver St., New York 4, N. Y. Together with a bullseye level, the joint is said to allow perfect leveling up in a matter of seconds.



A quick-coupling joint adds stability to the Kern GK-1. The operator places the instrument on its tripod, twists it into place, and the two components become a rigid whole. After the instrument has been leveled with the bullseye device (read through a mirror tilted at a 45-degree angle), a fine tilt screw is adjusted to bring the telescope into perfect level.

As on most American models, telescope glass has stadia lines for distance readings. All air-to-glass surfaces have received a hard coating.

For further information write to the company, or use the Request Card at page 18. Circle No. 508.

THINK OF AGGREGATE PRODUCTION

Solving the "growing-pain" problems of our highway system is a real job. It *can* be done, but it will take big thinking. Billions of tons of aggregate are needed to keep America on wheels. *Think big* about equipment to produce it!

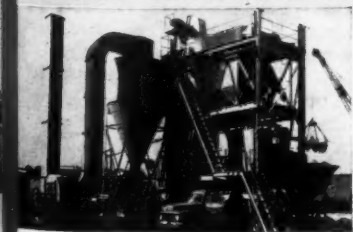
Think of equipment that produces greater hourly tonnages than ever before . . . equipment that's quality-built to take a daily beating in the world's toughest industry, and still keep slugging away, month after month. Think about the bidding advantages of equipment that combines big capacities with low operating and maintenance expense to hold per ton costs to levels comparable with those of twenty years ago!

You American contractors have the know-how to solve the critical highway problem . . . Cedarapids provides the equipment to help you *think big* about profitable production of big volumes of aggregate.

FOR EVERY CRUSHING AND SCREENING JOB



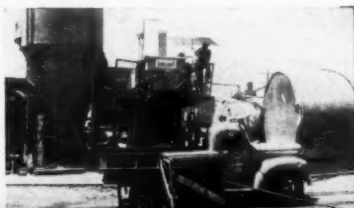
THINK CEDARAPIDS... WHEN YOU THINK BLACK TOP



MODEL E

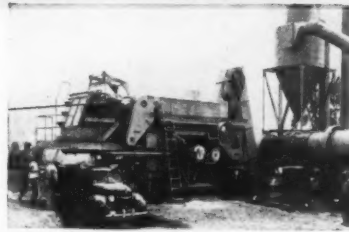
Two tons at a batch is average production for this Cedarapids Bituminous Mixing Plant. All-electric operation plus automatic time controls, signal lights and air controls insure absolute accuracy of mix and profitable production for low-bidding contractors.

MASTER PLANT
This two unit continuous-mix plant combines the Cedarapids Master Mixer and Gradation Control to supply specification mix in big volume. The mixing unit is offered with either a twin shaft pugmill which conforms to all existing specifications, or a single shaft pugmill designed for high speed, vigorous mixing.



MODEL FA

The most portable batch type bituminous mixer in the Cedarapids line. The FA can be set up for operation in a matter of hours. Centralized controls insure fast, easy, one-man operation. Balanced coordination of every part produces up to 350 tons per day of accurately weighed and uniformly mixed aggregates and bitumen. Quality-built for long-term service at lowest cost.





1. Etnyre distributor with side-bar extension sprays RC-3 asphalt on 5-foot shoulder.



2. Workman on Temple spreader controls flow of cover

Surface-Treating Crews Rush

New Jersey Turnpike Shoulder Job

By ALBERT C. SMITH
Associate Editor



View of southbound lanes shows contrast between light colored shoulders and dark pavement. A third lane will be added this year.

• PLENTY of production and material-handling know-how was called upon to do a fast job of shoulder surface treatment last fall on the New Jersey Turnpike. In a little over a month's working time, Union Building & Construction Co. repaired and treated well over 300 miles of 5 and 10-foot-wide shoulders along 98.5 miles of the divided super-highway. About 80 per cent of the job was completed before the winter shutdown. The contract extended from the southern terminus at Deepwater to Morses Creek in Linden, and included over 2,000,000 square yards of surface treatment.

The \$443,000 job was part of a general program to bring all phases of the turnpike up to the original specifications. To get the long expressway opened on time back in November, 1951, it had been necessary to use methods and materials that could be applied quickly, but would nevertheless maintain the road through the winter. If the officials had waited until spring to get a more satisfactory job, the financial loss would have been tremendous. The staggering interest rate of \$27,000 per day made it necessary to get the job finished and the tolls coming in as soon as possible.

Unexpected Traffic

Even before the spring of 1952 arrived, it became evident that traffic would far exceed the engineers' most liberal estimates. The shoulders were still doing well, but most of the service facilities were not. Long lines were forming at toll plazas, travelers were 5 and 10 deep at the hot-dog counters, and gasoline pumps were humming day and night. Consequently, a "first things first" policy required that work begin immediately to expand these facilities.

The shoulders held up for some time, but by late spring stretches in

the heavily travelled northern section were beginning to deteriorate. The Turnpike Authority then decided to rehabilitate the entire length.

New Lanes Needed

Several types of treatment were planned because some 4-lane areas were due for widening and the 6-lane areas needed a more permanent-type shoulder. The 118-mile turnpike is 4-lane from Deepwater on the Delaware River to Woodbridge, a distance of 92 miles. At Woodbridge the road was widened to 6 lanes to carry the heavy traffic load along the 22 miles to the Lincoln Tunnel interchange. The final 4-mile section runs 4 lanes to the northern terminus.

With the exception of a 6-lane stretch in the Linden area, the original 10-inch compacted shoulders were surfaced with a double-bituminous treatment. This temporary-type shoulder was not in accordance with original specifications, but officials point out that it was the best construction possible to get the job done on time.

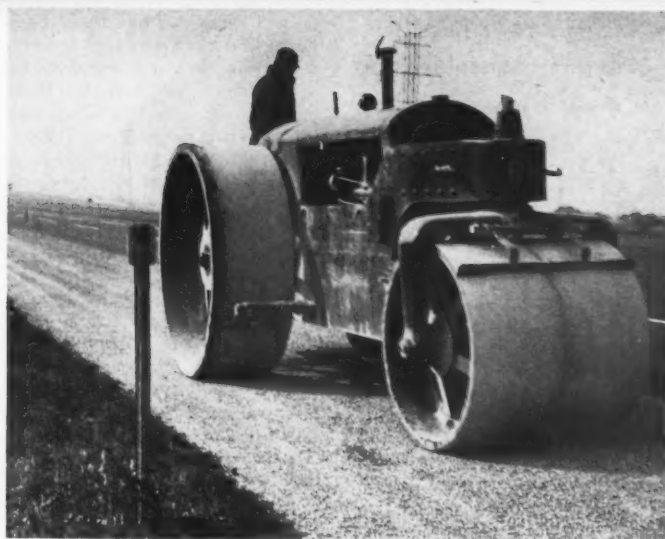
The original specifications had also required light-colored stone chips on the shoulder to contrast with the darker pavement. This type of stone was not available at the time of construction, but was used on all the recent shoulder work.

When plans were being made last summer to rehabilitate the entire 118 miles, it became evident that a reconstructed permanent shoulder would be desirable only in the 6-lane sections. The unexpectedly large traffic had already shown that 6 lanes were needed from Camden to the northern end, and that in this section all outside shoulders in 4-lane areas would soon have to be replaced by the new lane.

Consequently, plans were made to



3. Sweeper on Huber tractor brushes loose cover-stone back onto 10-foot shoulder.



4. Galion 10-ton roller follows along rapidly to complete operation.

divide the work into two contracts, both awarded to Union Building & Construction Co. Contract 91 would construct a permanent-type shoulder in that part of the 6-lane stretch that had only surface-treated gravel. It would also stabilize the northern-most 4-mile length until the extra lanes could be added in spring. (See C. & E., Dec., 1952, pg. 32.) Surface treatment of the permanent shoulder in the 6-lane area was also included.

Contract 92 for the southern 100 miles consisted of repairing and surface treatment. Much of the shoulder in this contract was destined to be replaced by new lanes, and the surface treatment was provided as a temporary measure.

Race With Time

Work on the 100-mile southern strip did not begin until October 15, and it was a real race with time to get as much shoulder as possible treated before winter. In addition to the treatment, the job required considerable preliminary work. Over 260,000 square yards had to be repaired and built up to pavement grade. About 130,000 square yards was regraded before any surface treatment could be applied.

Union Building had already set up headquarters near the Turnpike for previous work on Newark Airport, Port Newark, and the Turnpike's Contract 91. With men and equipment already assigned to the area, the problem of organization for the new contract was somewhat simplified.

But surface treating nearly 100 miles of shoulder under the worst possible traffic hazards, in bad weather, and in a limited time was still a major challenge. The contractor's first move was to divide the lower 50 miles into three subcontracts. The upper half he could take care of with his own men and equipment operating out of one or two headquarters. Tar and asphalt for the entire job, however, was distributed by Union Building.

Organization

Before any work started, Tommy Knowles, the Project Manager, assigned Red (Harry) Johnson to supervise the northern 50 miles, and Cliff Whitely the southern 50 miles. In such a huge material-handling job Knowles knew that constant

(Continued on next page)

GENERALS

do any job, anywhere -
**FASTER! EASIER!
AT LOWER COST!**



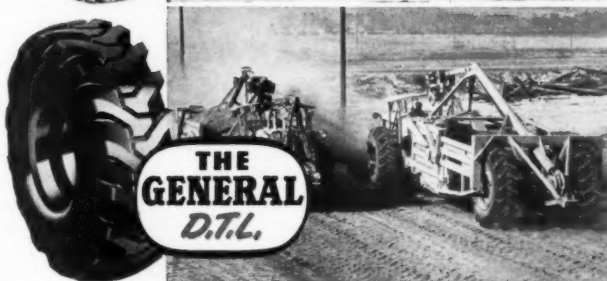
GENERAL L. C. M.

For most work off the road, some on. Broad, deep lugs and thick, rugged shoulders prevent cuts, snags, bruises. More rayon cords, more rubber for extra carcass strength.



GENERAL H. C. T.

Designed for most work on the road, some off. Long-wearing safety tread and reinforced shoulder cleats give more traction, more original and recap miles.



GENERAL DUAL TRACTION LUG

To move more yards of dirt, the General Dual Traction Lug digs deep for more traction in soft going, forward or backward. Makes heavy jobs easy.

Make Every Worn Tire Work Longer for More Profit!
Your General Tire Dealer will KRAFT SYSTEM RECAP Worn Tires
with the New General Truck Tire Tread of Your Choice



You're throwing away money when you throw away worn tires or accept an ordinary "adjustment" for them. Let your General Tire Dealer—a tire expert—restore worn tires with famous factory controlled Kraft System

Recapping. You choose from the complete line of on and off-the-road new General Tire treads and he'll put that tread on your worn tire. He can do sectional repairs too. Get Kraft System Recapping—get more profit from every tire.

SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT

Surfacing Crews Rush Turnpike Shoulder Job

(Continued from preceding page)

checks would have to be made to see that every crew had enough men and was getting both stone and asphalt on schedule. Both men drove hundreds of miles a day to straighten out the kinks in the important supply line.

Stone handling also had to be well planned before any work started. The light-colored chips were coming from New York Trap Rock Co., about 30 miles up the Hudson River, and barges were the only way to get it in. The contractor leased wharf space both at Port Newark and about 25 miles south of it at South River. Big Lima cranes with 3-yard clams kept the trucks rolling. Hough Payloaders were used to dress up the stockpiles. Stone for the southern half was from Bradford Hills Quarry in Downingtown, Pa.

Keeping all crews supplied with tar and asphalt also required advance planning. Six 4,000 to 5,000-gallon storage trailers were enough to supply the 6 Etnyre distributors. Small 1,000-gallon distributors worked with the repair crews and the larger 1,500 to 2,100-gallon units handled the surface treatment. All the asphalt was supplied by Standard Oil from Sewaren, N. J. The hauls ranged from just a few miles to almost 100.

Efficient use of personnel took careful planning. In addition to the surface-treating force, at least 7 other crews were out doing several types of preliminary work. It was important not only to keep all crews supplied with materials, but to be sure that operations were following in the proper sequence, at the proper time, and on only one side of the road at a time.

Safety Problem

Undoubtedly, one of the most important phases of the planning was safety. With 60,000 to 70,000 vehicles a day racing along at 60 mph, it was imperative to use every precaution possible to protect both the workmen and the drivers. The contractor was restricted to the full width of the shoulder plus a maximum of 2 feet beyond the 10-foot shoulder and 7 feet beyond the 5-foot shoulder. He could not conduct operations simultaneously on any 2 parallel shoulders adjacent to the northbound or southbound lanes.

Large yellow and black signs were placed about one mile ahead of any work. A flagman was kept about ¼ mile ahead. On the fast-moving surface-treatment work one truck and two men were kept busy placing and picking up traffic cones to provide a 2 mile-stretch of protection. In addition to all these precautions, it was constantly necessary to warn all personnel of the danger. One workman brooming stone chips forgot the warning, and lost his life by stepping too close to the line of speeding traffic.

Work Begins

After the major plans were made, crews were sent out on the turnpike on October 15. First, all grass, weeds, and other vegetation were

burned with a Hauck kerosene torch. The next step was to sweep all surplus stone and dirt from the shoulder as a preparation for patching and repair work. One mechanical sweeper mounted on a Huber tractor and three hand sweepers did the job.

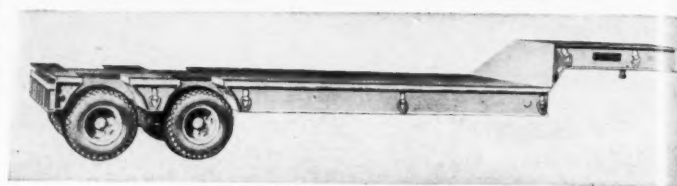
To bind up the outer edge of the 10-foot shoulder and to prepare the dirty shoulder surface near the berm, ½ gallon per square yard MC-O cutback asphalt was applied in 2-foot-wide stretches.

In areas where previous surface treatment had worn away, RT-3 tar prime was applied at ½ gallon per square yard. These areas were cured for about 7 days. The operation usually required one distributor and two men hand hosing.

The next operation was patching. Two crews, composed of seven men each, hand hosed the holes with RC-3 asphalt and then covered

SOLVE YOUR HAULING PROBLEMS WITH A "TRANSPORT TRAILER"

Capacities through 75 Ton—Semi and Full Trailers



CARGO CARRIER MODEL GPX (Semi) with Tandem Axles

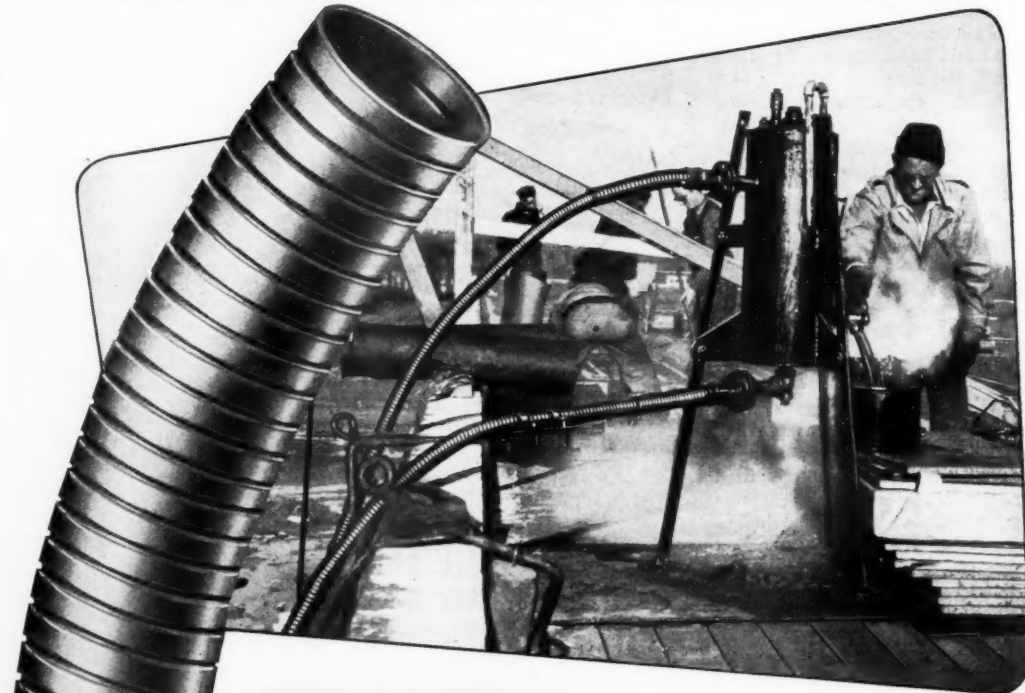
PATENTED TANDEM AXLE ASSEMBLY—Featuring unusual lengthwise and sidewise wheel accommodation to irregularities in the road. Use of full width tubular forged, heat treated axles with CAMBER.

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"Flexineering."



To pass hot tar from ground level to roof was the problem of one roofing equipment manufacturer. Penflex "Flexineering" had the answer. Using 1½" Penflex interlocked metal hose, a tar circulating system was designed, from heater to roof tank... leak-proof and safe.

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PENFLEX

HEART OF INDUSTRY'S LIFE LINES

CONTRACTORS AND ENGINEERS

them with stone chips. A 10-ton roller compacted the patches.

Where shoulders were below grade, areas were built up with surface treatment and $\frac{3}{8}$ -inch stone, broomed, and then rolled. Large areas where original surface treatment had deteriorated were scarified 3 inches deep, reshaped, and rolled. The prime coat was then applied, the area surface-treated, and then covered with stone chips.

When all these preliminary repair and regrading operations were completed, the stretch was swept again to prepare it for final surface treating.

Final Surface Treating

The real production operation was the final surface treating. And with nearly 2 million square yards to do before winter, it had to be the best possible production.

The operation simply involved applying asphalt, covering with stone, sweeping, and rolling. But it took careful watching of both equipment and personnel to keep up the goal of 12 miles a day. Distributors had to keep loaded and well ahead of stone spreading and rolling.

The material for the surface treatment consisted of $\frac{1}{4}$ gallon per square yard of RC-3 asphalt covered with 25 pounds per square yard of light-colored limestone chips. The 80-150 penetration asphalt was applied at 175 degrees F. Because of the late season and the possibility of wet ground, 1 percent by weight of Darakote anti-stripping additive was used in the asphalt. This made it possible to spread cover stone while damp, and also provided a better bond between asphalt and stone.

Distributors were equipped with splash plates to enable the operator to control the application to a clean well defined line. To insure a good seal where the pavement meets the shoulder, a 1-inch asphalt overlap was provided at the joint.

Stone was hauled in 15-ton dump bodies mounted on Macks and Autos. These trucks backed over the stone as it flowed out over the hot asphalt in controlled volume from Temple spreaders. A mechanical sweeper brushed loose stone from the pavement back onto the shoulder. Touching up bare spots was done by hand sweeping. Two 10-ton Galion rollers completed the work.

Previous Contract

Similar surface-treatment work was done north of Linden as part of the previous Contract 91. In addition, over 206,000 square yards of

TRANSITS and LEVELS

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OR
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SALE OR RENT

HEADQUARTERS FOR
REPAIRS — any make



We will buy or trade in old Transits, Levels, Alidades, etc. Send instruments for valuation.

Write for Catalog EC-32 of Engineering Instruments, Engineering Field Equipment and Drafting Room supplies.

WARREN-KNIGHT CO.

Mfrs. of Transits & Levels
136 N. 12th St., Philadelphia 7, Pa.



Apsco widener lays 3-inch thick stone mat for reconstructed shoulder in northern section of Turnpike. It averages up to 2 miles in an 8-hour day.

permanent penetration macadam shoulder was constructed. This new shoulder was made by first boxing out bad shoulder areas with a special blade attached to a Cat grader. A Pettibone-Mulliken Speedloader followed behind and loaded the windrowed material into trucks.

On the 10-foot shoulders, the $1\frac{1}{2}$ -inch stone was dumped into a Jersey spreader pushed by a Cat D8 tractor. An Apsco widener laid the 3-inch stone mat on the 5-foot strip. Galion 3-wheel rollers then followed closely behind. The 9-man stone crew averaged from $1\frac{1}{2}$ to 2 miles in an 8-hour day.

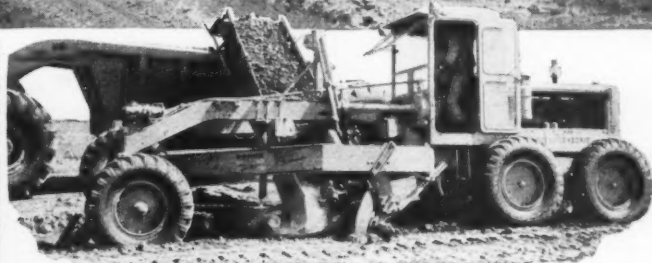
The compacted stone was penetrated with $\frac{1}{2}$ gallon per square yard of OA-4 asphalt with 85 to 100 penetration. Then $\frac{3}{8}$ -inch stone was spread and rolled. Final surface treatment was the same in all areas.

The job was unusual in many respects.
(Concluded on next page)

DOMOR Elevating Grader



LOADS DW 20'S



L. G. DeFelice & Son, Inc.

use **DOMOR** on N.Y. Airport

Earl B. Yates, Field Superintendent, L. G. DeFelice & Son, Inc., reports: "The Domor far exceeded our expectations in stripping and loading. DW20's were loaded with 25 yards in 90 seconds."

Ninety seconds after a Cat DW20-W20 Wagon pulls beneath the conveyor of the Domor Elevating Grader, the heap-loaded rig is on its way to the fill. That's the production picture that L. G. DeFelice & Son, Inc., New Haven, Conn., is enjoying on an airfield project near Calverton, L. I., N.Y.

The Domor cuts and loads 25 yards of the sandy topsoil in $1\frac{1}{2}$ minutes... the blade cuts smooth and the units work on undisturbed soil.

If you haven't seen a Domor Elevating Grader at work, ask your Caterpillar Dealer for information. He can tell you—and show you how the Domor out-produces bigger loaders at much less cost. Call on him.

ULRICH PRODUCTS CORPORATION, ROANOKE, ILLINOIS



Ulrich Products CORPORATION

ROANOKE, ILLINOIS

Surfacing Crews Rush Turnpike Shoulder Job

(Continued from preceding page)

spects. While fighting time, weather, and traffic on the lower 100 miles, the contractor had to distribute about 600,000 gallons of asphalt. Another big problem was communication. With eight different crews working all over the turnpike, it was important to keep in close touch with all foremen and supervisors. A system of G-E radios did the job.

The long miles covered every day also provided a personnel problem. Men needed refreshments during the day, and there were no coke machines along the way. The contractor assigned one pick-up truck to carry water all day to the various crews.

Personnel

Between both contracts, up to 500 men were employed on the turnpike by Union Building. Tommy Knowles was Project Manager for the contractor.

Harvey Vincent was engineer in charge for the New Jersey Turnpike Authority. Louis Ripa was Field Inspector for the general consultant, Howard, Needles, Tammen & Bergendoff. Stewart Associates, Inc. of Cambridge, Mass., were bituminous consultants. All work was under the direction of Charles M. Noble, Chief Engineer for the Turnpike Authority.

State Highway Maintenance: HRB Reports on Connecticut

The Highway Research Board's Special Report 8 is a production study on Connecticut's highway maintenance. The study, conducted jointly by the Connecticut State Highway Department and the Bureau of Public Roads, Department of Commerce, is compiled by Fred B. Farrell, Chief of the BPR's Highway Cost Section.

The bulletin, complete with maps, diagrams, and pictures, is a comprehensive report on all aspects of the State's highway maintenance. Included are such subjects as: the maintenance organization in Connecticut's State Highway Department; employment trends and personnel policies; equipment assignment and rental practices; accounting practices; foremen's time charges; labor and equipment workload trends.

HRB Special Report 8, "Connecticut Highway Maintenance Production Study", is available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. It is priced at \$2.70.

Tester for Concrete

A new compression tester for concrete blocks, lintels, cylinders, bricks, beams, and staves has been developed by Forney, Inc., New Castle, Pa.

The machine is produced in both manually and electrically operated models. Either model requires only an easy 5-minute operation. No trained technicians are necessary, according to the manufacturer. Features of the new machine include a dial which gives immediate and accurate readings and eliminates the



Eyes left for Forney's new Model 1216D compression tester for concrete.

chance of error in using conversion tables.

The new tester, known as No. 1216D, conforms to all requirements set up by the ASTM for this type

machine.

For further information write to the company, or use the Request Card at page 18. Circle No. 513.

Concrete-Breaking Device

A folder on its hydraulic-jack device for breaking mass concrete or rock has been issued by the K. O. Duncan Co., 10515 Lauriston Ave., Los Angeles 64, Calif. The Roc-Jak, which is actually one tool made up of ten 15-ton jacks, is used on concrete foundations, abutments, revetments, piers, and other structures when explosives or ball drops are prohibited.

The folder gives detailed operating directions. Accompanying photographs clarify the procedure.

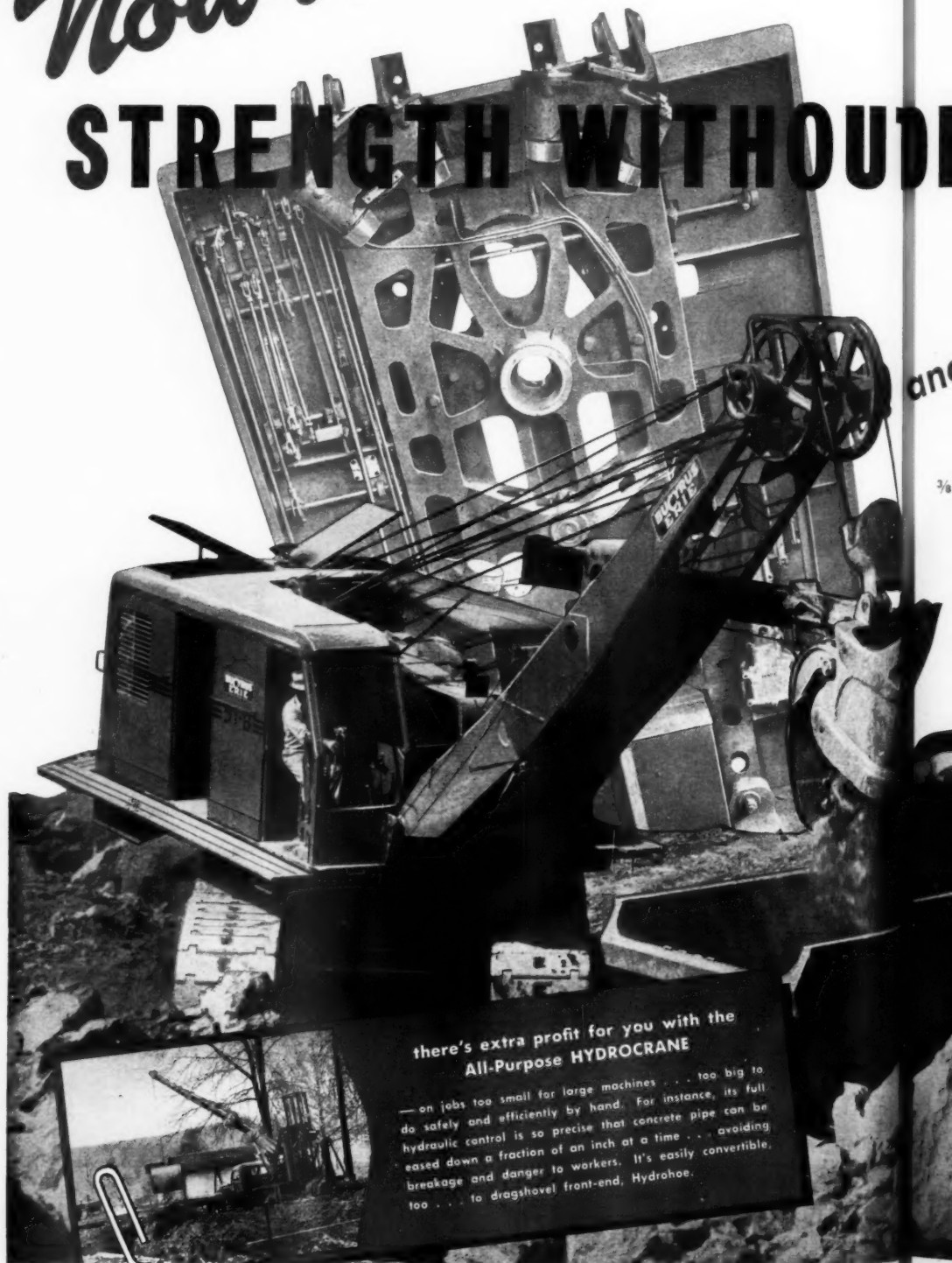
This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 412.

Baker-Raulang Sales News

The Baker-Raulang Co., Cleveland, Ohio, manufacturer of industrial trucks, has made the following sales appointments: E. E. McVeigh, former Field and Sales Engineer, has been named Manager of Commercial Sales, with the responsibility of directing all dealer activities in Baker's Western Division and the supervision of application engineering projects involving that Division's users and prospects.

The new Manager of Government Sales is R. T. Tiebout, who will represent the company in its negotiations with all branches of the Government and will cooperate with Government procurement agencies in the determination of industrial-truck specifications. A third appointment is that of Edmund C. Horman, Regional Sales Manager, New York metropolitan area.

Now... STRENGTH WITHOUT



there's extra profit for you with the
All-Purpose HYDROCRANE

— on jobs too small for large machines . . . too big to do safely and efficiently by hand. For instance, its full hydraulic control is so precise that concrete pipe can be eased down a fraction of an inch at a time . . . avoiding breakage and danger to workers. It's easily convertible, too . . . to dragshovel front-end, Hydrohoe.

Vet Rock Crusher Goes on Sick Leave

A Korean war veteran of 23 months' straight combat, recently left the battle zone for a well-earned rest. The campaigner, a \$12,000 rock crusher, was a gift to the Army from the Iowa Mfg. Co., Cedar Rapids, Iowa, employees, who built it to honor a fellow employee missing in action in World War II.

Last winter, the 12-ton unit with a gasoline engine was used 24 hours a day for three months. It crushed enough rock—at the rate of 25 cubic yards an hour—to lay a foundation for 20 miles of a main supply route to front-line troops. But now the crusher has become a war casualty itself. Its conveyor belt slipped out of line. In Japan for a patch-up job, it will be returned to the front this winter for more action.



Crew members check the 12-ton rock crusher before its evacuation for rebuilding.

Tube Device Expels Liquid from Tractor Tire

A self-draining tube that completely empties a liquid-filled tractor tire in 15 minutes is made by the Steidinger Service, Fairbury, Ill. No special equipment is needed. The expelling device, which causes the entire liquid content of the tube to spray out, may be purchased alone and installed in an ordinary tube.

The manufacturer points out that this method allows frequent adjustment of liquid pressure in tires so that the most efficient amount of weighting can be maintained as working conditions change. In the event of a flat tire it is said to save time and the extra cost of special servicing.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 420.

What, No Beer?

"If I can't have a glass of beer after spending all day out on the hot dusty desert, the hell with it." This sums up the attitude of the average American construction worker in Saudi Arabia. According to James H. Dillon, President of the Construction Men's Association, New York, N. Y., these men are leaving their jobs in droves and returning to the United States, many of them several months before their contracts run out.

The trouble started when King Ibn Saud recently withdrew the special dispensation concerning liquor which he had made when he engaged American construction firms to build refineries, roads, and utilities, and to undertake other projects. Mohammedanism—the official religion of Arabia—contains a strict interdiction against alcohol in any form. The King, however, waived this Moslem rule in behalf of the Americans and permitted the importation of beer and hard liquor into the country for their use only. Since that time he has changed his mind, for reasons best known to himself. When present supplies are exhausted, no more liquor may be imported—not even hair tonic if it contains alcohol.

Omar Khayyam's philosophy does not apparently find favor with His Majesty. On the other hand, there can be little doubt that the 5,000 American workers in Saudi Arabia would endorse that poet's recipe for a good life in the wilderness (with the possible exception of the book of verse). It is confusing.

Booklet Discusses Pumps

Details and specifications of its pumps are given in a catalog by the Rice Pump & Machine Co., Grafton, Wis. A cross-section drawing and accompanying text stress features of the pumps such as the cartridge-type shaft seal.

Pumps are shown with capacities from 7,000 to 40,000 gph. All models have air-cooled gasoline engines. Some are available with pulleys for belt drive and flexible couplings for electric motor drives.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 457.

DEADWEIGHT . . .

counts more than ever

and it's yours with Bucyrus-Erie's 2-yd. 51-B

3/4 to 4-yd. Gasoline,

Diesel, Electric

Excavators

HERE'S an excavator that combines built-in durability with weight economy to give bigger output with less maintenance.

For instance, the 51-B's revolving frame is a single box-section casting of annealed steel . . . specially developed and cast by Bucyrus-Erie. This solid "backbone" provides real rigidity for machinery alignment—yet holds weight to a minimum. As a result, vibration is minimized in the 51-B . . . and it can swing fast, work at a profit-building pace.

The 51-B's truck frame and caterpillar side frames are single annealed steel castings, too—for strength with light weight. Boom and handle are light, welded box-sections that provide ample strength for all working stresses. Independent rope crowd eliminates the need for heavy boom machinery.

Every part of the 51-B reflects advanced engineering that cuts out dead weight without compromising strength. This means you get most economical application of power and lowest upkeep—with bigger payloads every pass, more passes every day.

66E52C

**BUCYRUS
ERIE**

SOUTH MILWAUKEE, WISCONSIN

*Most Compared
Most Preferred*

Walls Are Insulated With Cellular Glass

Naval Housing Project Uses Sandwich-Type Insulation For Prefabricated Wall Units

• ADVANCED construction techniques are a feature of Forrestal Village, near Chicago, Ill., a building development which houses Navy personnel at the Great Lakes Naval Training Station. One of the most interesting details is the use of prefabricated load-bearing concrete wall units, insulated by means of sandwiching cellular glass between two layers of concrete.

This construction was sponsored and undertaken by The Corbetta-Price Co., Inc., a joint-venturers organization composed of Corbetta Construction Co., Inc., New York, N. Y., and The Price Bros., Dayton, Ohio.



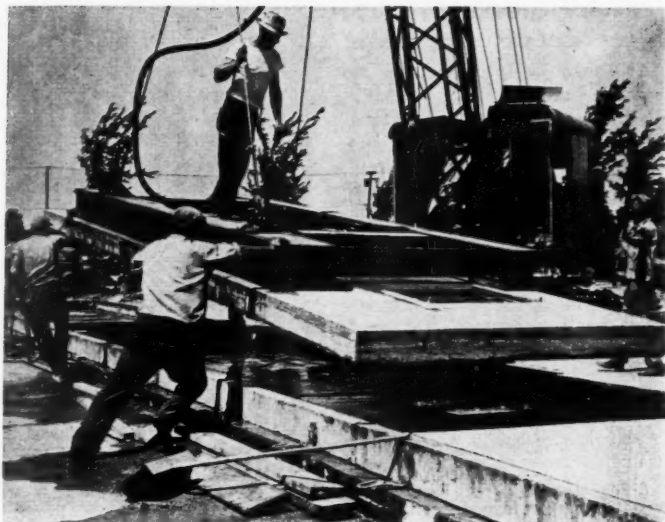
A workman places shear ties between Foamglas joints, as the insulation is set in place over the first layer of concrete.

Fabrication of Wall Units

The first step was to set up eight rows of casting beds 300 feet long x 10 feet wide at the site where the wall units were assembled. These long beds were divided by concrete members into the individual wall sections. The schedule for the casting yard called for the daily manufacture of all the wall units required

for the erection of a building containing four dwelling units. Each casting bed could be adapted to produce any one of the ten different building types. An average of 4,200 square feet of wall area was fabricated per day.

After a casting bed had been cleaned, it was mop-coated with a liquid parting agent to prevent the concrete from bonding to the ply-



In just 3 minutes the vacuum mat develops enough suction to permit the crane to lift the wall unit and set it on the A-rack aboard the waiting truck.

NO BUGS! NO ORPHAN MODELS! What's "new" in other compressors, Jaeger has built for 5 years

If you plan to buy a portable compressor, you now have 3 kinds to choose from:

- 1: Machines that still cling to the 20-year old ratings of 60, 105, 160, 210 and 315 ft., and are too small to run today's air tools efficiently.
- 2: New models offering, for the first time, the higher ratings which today's tools require.
- 3: Jaeger "Air Plus" Compressors which originated these higher ratings 5 years ago and guarantee them with the proved performance of more than 30,000 "new standard" compressors in the field.

No other compressors, new or old, yet give you Jaeger's features:

Balanced W-type 2-stage compressor in every size from 75 to 600 ft.

75% to 100% larger valves than in older type machines.

Positive lubrication by gear driven oil pump, standard in all models.

Bigger intercoolers and air receivers. Relief valve for automatic drainage standard in all models.

Bigger engines operated at conservative speeds, and bigger multiplate clutches than on any other compressors.

"Fuel Miser" control standard on all models where automatic regulation of engine speed means worthwhile fuel savings.

Lowest cost compressed air you can buy:

Prices of Jaeger compressors are, in every case, lower than those being asked for old standard compressors. Your cost per cu. ft. of air is many dollars lower because a Jaeger delivers 15% to 25% more air. And with this added air holding 90 to 100 lbs. pressure at the tools, instead of mere 70 lbs., you get 30% to 40% more production with the same men and tools.

Ask your Jaeger distributor to prove this. Or send for Catalog JC-1, which gives full data on compressors, tools and their air requirements — facts not published in any other catalog.

Jaeger Model 75 — the first compressor to operate one heavy pavement breaker efficiently.

Jaeger Model 125 — (illustrated) the first compressor to operate 2 heavy pavement breakers efficiently.

Jaeger Model 185 — the first compressor to operate 3 heavy pavement breakers efficiently.

Jaeger Model 250 — the first compressor to operate a 3½" wagon drill or 2 heavy rock drills efficiently.

Jaeger Model 365 — (illustrated) the first compressor to operate a ¾" nozzle sand blaster efficiently. Can also run a 4" wagon drill at full pressure with air to spare for plug-hole drilling.

Jaeger Model 600 — the first compressor to operate two 4" wagon drills or a 9B-3 heavy pile hammer efficiently. (Introduced in 1946, when all others built 500 ft. compressors.)



Maximum Joint Filling

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Servicised SELF-EXPANDING CORK



- ▶ Recovers 50% Beyond Original Thickness After Compression
- ▶ Fully Compressible
- ▶ Non-extruding, Resilient

Ideal for large concrete structures or masses where substantial initial contraction is anticipated before any considerable amount of expansion takes place. 50% expansion beyond original thickness after compression keeps joint space filled, regardless of concrete movement. Made in ½" to 1" thicknesses; 2" to 12" (Standard) widths; also made in 24" and 36" widths on special order.

Write for Catalog and Complete details on Servicised Joint Fillers and Sealers.



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701 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • TRUCK MIXERS • AGGREGATE SPREADERS • CONCRETE SPREADERS and FINISHERS

CONTRACTORS AND ENGINEERS

wood base of the bed. Next, steel windows, door frames, welding plates, lifting hooks, and in certain panels kitchen exhaust fans were laid in place in the bed. Around these pieces pre-cut sheets of reinforcing mesh were set on reinforced chairs to hold the mesh above the bed. This allowed concrete to work its way under the mesh.

Ready-mixed concrete forming the interior face of the wall unit was poured 4 inches thick in the bed. The concrete was then screeded and vibrated to insure placement of the stiff mixture. The insulation crew moved in next while the concrete workers went on to the mold for the next panel. The insulation workers rapidly laid blocks of Foamglas insulation over the fresh concrete. Then, between the rows of glass, they inserted in the concrete, in an upright position, ties of welded wire mesh 4 inches wide in convenient lengths. Reinforcing mesh was laid on this assembly, resting on the shear ties and wired to them. The shear ties served to tie the veneers of concrete together. Ready-mixed concrete was poured over the Foamglas to a thickness of 2½ inches. The final layer of concrete was screeded and vibrated and floated to give it a smooth level surface. The areas around windows and door were steel-troweled and the general wall surface was broomed to create a texture contrast. Relief molds were used to imprint a design on certain wall units. The durable concrete formed the exterior and interior wall surfaces; the Foamglas, an insulant and vapor barrier; the combination resulted in a "U" value for the wall of 0.198.

When the complete row of wall units had been assembled they were covered with waterproof paper and left in the form for a 2-day curing period.

Erecting the Walls

The wall units were then lifted from the casting bed by means of a vacuum mat and crane. It took about 11 minutes to lift two units from the form and set them in place on a waiting truck. When the truck delivered the wall units to the erection site they were lifted by a crane which lowered a lifting beam while workmen engaged it to the lifting hooks cast in the wall unit. The crane lifted the unit and set it in place on the floor slab of the building. The panel was then bolted in place with braces, which supported it until the four walls of the building had been welded together. The caulking of all joints completed the installation of the walls.

Cheaper and Quicker

While complete cost data on the wall units are not yet available it is said to be less expensive than other forms of standard construction which meet strict FHA requirements. The construction pace is comparable to mass-production techniques employed in factories.

Motor-Grader Booklets

Two booklets on motor graders have been issued by the Caterpillar Tractor Co., Peoria 8, Ill. One of these (Form 30469) is intended especially for governmental agencies with jurisdiction over local-rural roads. It tells how they use motor

graders for road building and maintenance. A table of repair costs compiled from public records is given.

On-the-job descriptions of the three graders on highway, dam, and airport work appear in a second booklet (Form 30529).

This literature may be obtained from the company, or by using the Request Card at page 18. Circle Nos. 528 and 529 for Forms 30469 and 30529 respectively.

Hyster Promotes Hazel

Thomas R. Hazel has been appointed Head of the Standards Division of the Design Engineering Department of Hyster Co., Portland, Oreg., manufacturer of industrial lift trucks and tractor equipment. He has been with the company six years in the Engineering Department, Tractor Equipment Division.



Plymouth locomotive to haul bigger loads with a 50 per cent fuel-cost decrease. A 4-cylinder GM diesel-torque-converter engine is the locomotive's new source of power. Stephens-Jones Co., Des Moines, made the installation. The locomotive is shown here shifting cars that have just unloaded aggregate for stockpiling at a concrete batch plant.

THE MARTIN R4TL ALLOY STEEL TRAILER

Built throughout of high strength alloy steel, combining light weight with great strength.



• Legal axle load is maintained

• Weight is less than 8000 pounds

• 27 ton capacity

• Low operating and maintenance costs



THESE WEIGHTS TELL THE STORY

Here are the actual recorded axle weights, under job conditions, of an R4TL alloy steel trailer, loaded with a mud-laden Caterpillar D8 Tractor equipped with Dozer, Cable Control and Canopy.

Axle	Weight in Pounds
Front.....	4920
Truck Tandem.....	31320
Trailer Tandem.....	31820
D8 Tractor.....	51640
Truck.....	8640

The Martin Alloy-Steel Trailer is primarily designed to haul equipment up to the Caterpillar D8 weight class and still remain within legal axle load limits in most states.

Fabricated throughout with high strength alloy steel, this trailer can be built lighter without sacrificing strength for handling capacity payloads.

Proper weight distribution lowers required pulling effort — reduces tire and brake wear — lessens fuel consumption — thus lowering operating and maintenance costs.

The alloy steel R4TL trailer is a standard model in the MARTIN line and is available at no increase in cost over the regular R4TL.

Your Martin-Caterpillar Dealer can give you more profitable details — see him and start saving on hauling costs with a Martin!

MARTIN

Trailers

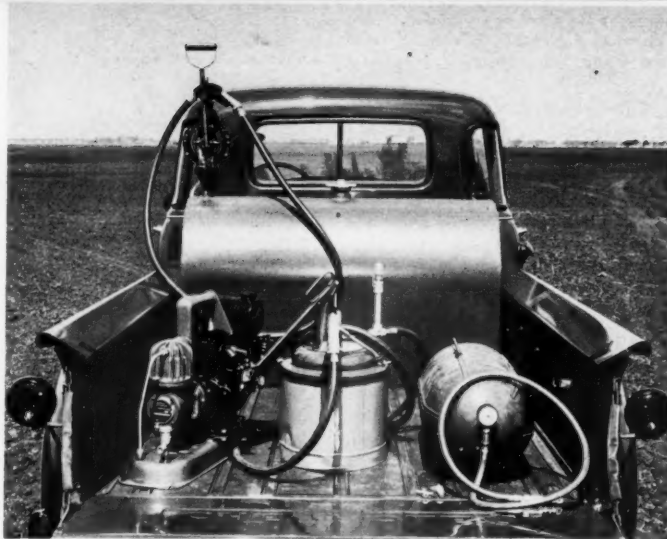
KEWANEE
ILLINOIS

Mobile Service Unit

A mobile equipment-servicing unit for installing in a pickup truck has been developed by the Fargo Foundry Co., Fargo, N. Dak. It has a gasoline tank with a hand pump and hose, an air compressor, a pressure lubricator, and an air-storage tank.

The 120-gallon fuel tank has a surge plate and a combination vacuum and pressure vent in the fill cap. The 1/3-hp portable air compressor supplies air to the lubricator, which dispenses 350 shots from either a 25 or a 35-pound container. The air-storage tank provides 150 pounds working pressure for inflating tires. The compressor is also used for spray painting and dusting of machine parts.

For further information write to the company, or use the Request Card at page 18. Circle No. 440.



The Fargo field service station can be installed in any pickup truck.

"We're through experimenting!
...Sinclair Lubricants
suit us to a T"



...says Al DeFeo, Sette Engineering Co., Paramus, N. J.

Mr. DeFeo's job as Treasurer and Purchasing Agent is to see that maintenance costs on the company's heavy excavation and road building equipment are kept at their lowest figure. He reports: — "Our books give us an exact picture of how our equipment is holding up... About 10 years ago we experimented with different brands of lubricants, looking for one that would suit our equipment requirements to a 'T'. After trying Sinclair lubricants, our figures proved we finally had the right products. With Sinclair TENOL® and Sinclair LITHOLINE® Multi Purpose Grease we cut maintenance costs to a new low. Experimenting proved one thing to us — Sinclair is tops."

To cut your maintenance costs, try Sinclair Lubricants. Contact your local Sinclair Supplier or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

For your tough jobs

SINCLAIR LUBRICANTS

Huge Extrusion Press Is Erected in Indiana

A German-made 13,200-ton horizontal extrusion press is being erected as part of the Air Force's heavy-press program at the Lafayette, Ind., plant of the Aluminum Company of America. Work has been started by F. H. McGraw & Co., New York City contractor, and is scheduled to be completed by June of this year.

The press, when installed, will be slightly more than twice as powerful as any extrusion press now in operation and, as a result of its size, will be able to extrude larger and more intricate shapes (nearly four times the weight of those now available) for tomorrow's planes. One casting, which will form the cylinder housing for the press, weighs 213,216 pounds and is 8½ feet wide and 14½ feet high. The platen for the press weighs 103 tons. Though the Government will have first call on all production when the press starts operating next summer, in peacetime it will be used to make aluminum pipe for the petroleum industry as well as curtain walls for ultra-modern buildings.

Almanac for Surveyors

The 1953 edition of the *Gurley Ephemeris*, including an almanac listing 28 selected stars for determining azimuths by stellar observations, is now available from W. & L. E. Gurley, Troy, N. Y.

The almanac section of the 100-page pocket-size booklet is an abridgment of the *American Nautical Almanac*, and gives complete instruction for determining azimuths by methods similar to those used in observations of the sun and Polaris. The *Ephemeris* includes definitions of astronomical terms, descriptions of methods of observation, and examples of reducing data for determining a true meridian.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 510.

NEW IMPROVED! CANCAP
automatically
protects tractor exhaust
systems from damaging
rain, sleet and snow...

New Wider Opening Action
Allows Unrestricted
Exhaust Gas Escape.

Lightweight Cast
Aluminum Cap
Opens with First
Puff Of Exhaust.

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**makers of the
CANTON
TENSION PULL
LOAD BINDER**

3 SIZES
TO FIT ALL
EXHAUST PIPES
FROM 1 1/4" TO
5" O.D.
NO. 2 CANCAP
—fits all exhaust
pipes from 1 1/4"
to 2 1/4" \$1.90 ea.
NO. 3 CANCAP
2 1/4" to 3 1/4" \$2.25 ea.
NO. 4 CANCAP
3 1/4" to 4 1/4" \$2.75 ea.
NO. 5 CANCAP
4 1/4" to 5" \$3.75 ea.
NO. S-3 CANCAP
—fits John Deere
A, B, D, G, M,
R tractors \$1.90 ea.

CONTRACTORS AND ENGINEERS

Latest Tractor Has New Hydraulic System

The new Golden Jubilee Model Ford tractor has been announced by Dearborn Motors Corp., 2500 E. Maple Road, Birmingham, Mich. Streamlined in appearance, the new tractor is larger, longer, heavier, and is said to be more powerful than previous Ford tractors.

Instead of the cavitating hydraulic system used in previous Ford tractors, the new model introduces a solid system, completely filled with oil, which gives a split-second response to controls. The hydraulic mechanism provides both implement-position control and constant draft control at the flick of the selector lever. Hy-Trol gives the operator a choice of hydraulic operating speeds. An available feature is Selec-Trol which directs the hydraulic power to either a front or rear-mounted tool, and eliminates the necessity of buying an extra hydraulic pump. The tractor can be equipped with a power takeoff attachment which operates continuously whether the tractor is moving or standing still.

The new 4-cylinder overhead-valve Ford Red Tiger engine develops the high torque necessary to start heavy loads smoothly and to keep going.

For further information write to the company, or use the Request Card at page 18. Circle No. 474.

Hollow Concrete Floor Circulates Warmed Air

A new folder illustrates the use of hollow-core floor slabs for heating systems. The hollow-core slabs serve as a structural floor, and as ducts for a circulating warm-air and panel-heating system.

Schematic drawings show the flow of heated air through two kinds of installation of the Flexicore system. In the single-duct system, warm air passes from the furnace and supply duct through holes in the under side of the slabs out to both ends of the cores. It goes through holes on top of the slabs to a baseboard plenum and out into the room. In the counterflow system two supply ducts run along opposite sides of the building and each duct feeds alternate cores.

To obtain this literature write to Flexicore Co., Inc., 1932 East Monument Ave., Dayton 2, Ohio, or use the Request Card at page 18. Circle No. 505.

Brochure on a Trencher

A brochure on a trencher that mounts on a Ford or Ferguson tractor is available from the Arps Corp., New Holstein, Wis. The Trench Hog digs from 4 to 8 feet deep. Standard cutters come 6 to 20 inches wide in increments of 2 inches. Special disk-type cutters up to 18 inches wide are available.

Each driver wheel of the unit is independently controlled to give exact regulation for straight-line and curve digging. There are 7 speeds forward; a road speed of 12 mph makes it possible to transport the unit under its own power.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 495.



The new Golden Jubilee Model Ford tractor



**BIG LOAD
LITTLE EFFORT**

Loads like this were considered jobs for big heavy equipment not long ago — but today loads this big or bigger can be handled easily with plenty of horsepower in reserve in the power unit.

The secret of the Eimco 104 is in better engineering, better steel castings and the rocker-arm principle described at right — where effort is applied to obtain a maximum in mechanical advantage.

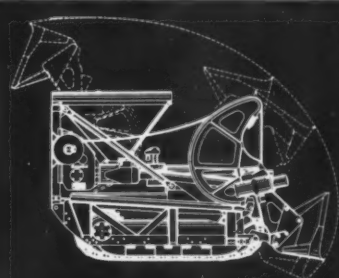
Eimco 104's are heavy-duty loaders. They'll handle rock as easily as sand and gravel. Bucket sizes vary with material being loaded with an average job loading rate of between 200 and 300 yards per hour depending on job conditions.

Eimco 104's are being used for highway maintenance, heavy earthmoving, contracts, tunnels, steel mills, sand and gravel pits and many other jobs. Write for more information on Eimco loaders. Built in 6 different models for all loading jobs.

Opens New Lab-Showplace

A new engineering and research center and large-scale showplace has been completed by Certain-teed Products Corp., Ardmore, Pa., manufacturer of building materials. The building, located on a 3-acre tract in Paoli, Pa., will be the center of all product development, testing, and plant engineering.

The lab was moved from Chicago, Ill., where it had been located for the past ten years, in the hope that its proximity to the executive office will ensure better coordination between engineering and chemistry departments and administrative and sales groups.



The rocker-arm principle is used on all Eimco Loaders. This principle, designed to give maximum force at the digging lip while the bucket is being worked up through the muck pile permits crowding forward at the same time so that the bucket will come up full every load.

EIMCO A431

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines
EXECUTIVE OFFICES AND FACTORIES — SALT LAKE CITY 10, UTAH U. S. A.

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EL PASO, TEXAS, HALL BUILDING • BERKELEY, CALIF., 437 CEDAR STREET
KELLOGG, IDAHO, 307 DIVISION ST. • LONDON, W. 1, ENGLAND, 190 PICCADILLY
IN FRANCE, SOCIETE EIMCO, PARIS, FRANCE
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You can't beat an Eimco



A Euclid single-engine scraper push-loads a twin-powered "Euc" scraper—resulting in production increase. J. C. Critcher, Inc., Asheville, N. C., devised the method.

Production Increase By Scraper Team-Up

By use of a unique scraper-operating method, J. C. Critcher, Inc., Asheville, N. C., has appreciably increased his production. Worked out at an airport-extension job at Morris Field, Charlotte, N. C., the new method consists of operating two separate teams of a Euclid twin-powered scraper and a Euclid single-engine scraper working together and push-loading each other. The twin-powered push-loads the single-engine scraper; the latter then pulls out, turns, and assists the "twin" in loading. The method has proved superior to the "twins" either self-loading or push-loading each other while the single-engine scrapers were push-loaded by a crawler tractor.

With the addition of the four "Eucs" acquired last year, Critcher has been able to obtain jobs totaling over 3 million yards. The airport job totaled 1,400,000 yards, of which 300,000 was subcontracted and moved with two additional single-engine scrapers. About 90 per cent of total yardage was moved by these six scrapers. Additional equipment on the job consisted of 2 Caterpillar motor graders; 3 International TD-18 and 2 TD-24 crawler tractors; and 4 Bucyrus-Erie scrapers. This is the first instance where this combination has been put to work in the

field and Critcher claims it has resulted in greater production than two other operating methods tried with the same equipment using two crawler tractors as pushers.

The next contract for the unique method is a difficult road-relocation

project near Franklin, N. C., which calls for the moving of approximately 1,000,000 yards.

A pint of blood means so much to them—so little to you. Remember that March is Red Cross Month.

Color Matching Aids Slide-Rule Reading

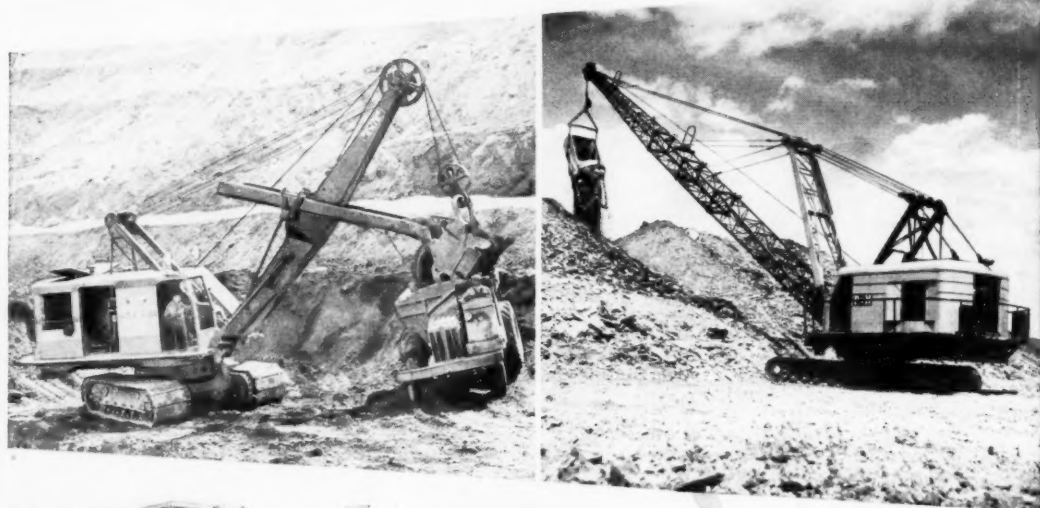
Calculations involving trigonometric functions are performed without the usual hazard of errors by simply matching the color of the trig scale with the same color of the corresponding C, D, or CI scales. This mathematical compatibility of the new color coding eliminates the necessity of memorizing co-functions, according to the manufacturer.

The superiority of the Versalog slide rule is in the R1 and R2 scale combination which is useful in computing kinetic energy, moment of inertia, and other quantities in which multiplication by the square of a number is involved.

Further information may be secured from the Frederick Post Co., Box 803, Chicago 90, Ill. Or use the Request Card at page 18. Circle No. 537.

BUDA DIESELS

MONEY MAKERS IN YOUR SHOVELS AND DRAGLINES...



WET JOBS



Whether it's
HEAVY
CONSTRUCTION
BUILDINGS
SEWERAGE
or any other
type of
wet work

For "quick-dry" ... specify ...

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

EQUALLY PROFITABLE IN ALL YOUR OTHER EQUIPMENT



When leading Shovel and Dragline builders pick Buda Diesels to power their equipment they choose them for good reasons:—longer life, lower operating cost—minimum maintenance ... more power ... greater torque ... extensive parts & service.

These same money-making advantages of Buda Diesels can be applied to almost every other piece of construction equipment you own. Don't miss a chance to re-power with Buda Diesels ... they're designed with your profits in mind.

BUDA

Manufacturers of Material Handling Equipment, Lifting Jacks, Maintenance of Way Products, Earth Drills and Diesel and Gasoline Engines

Facts and performance sell Buda Diesels. Get full details from your nearby Buda Distributor today. Write for Bulletin. The Buda Company, Harvey, Illinois

There's a Buda Diesel for Every Need

BC-23

CONTRACTORS AND ENGINEERS

Roadside Cleanup Costly but Essential

Roadside Litter — Its Cost, Cleanup, and Cure Discussed
By AASHO Committee on Roadside Development

By O. E. POTTER

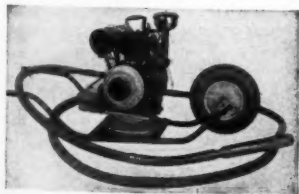
• A PROBLEM of mounting cost and increasing concern to highway-maintenance and roadside-development engineers is that of cleaning up the debris scattered along the highways, either carelessly or deliberately, by the public. This litter is both a nuisance and an expense. If left there, it is very damaging to mowing equipment; it accumulates and clogs drainage ditches and culverts; broken bottles and the sharp edges of cans often cut the feet of maintenance men as well as the tires of passing cars; and it is, of course, unsightly, thwarting efforts to provide more attractive roadsides. Cleanup is usually a hand-labor operation, expensive at today's labor rates, so the problem is costly either way—if you don't remove the debris or if you do. Theoretically, the major portion of roadside cleanup should be unnecessary; in practice, it is as long as an untidy and careless public continues its present habits.

This roadside litter—its cleanup, cost, and cure—was one of the subjects discussed by the American Association of State Highway Officials Committee on Roadside Development at its annual meeting in Kansas City in December. Just prior to the meeting, the Committee, under the chairmanship of John L. Wright, Engineer of Roadside Development in Connecticut, made a survey, by questionnaire, of the 48 states, to find out just how much roadside cleanup is costing, and what, if anything, can be done to minimize the problem. The replies to this questionnaire were the basis for the discussion.

It's a Costly Business

Of the 40 replies received, 24 give actual annual costs ranging from \$250,000 down to \$500. Nine states spend \$100,000 or more. The average is about \$78,000. One state estimates its cost at \$100 per mile; two states report a cost of approximately \$10 per mile of highway; another \$5,000 for cleaning up only 30 miles of divided highway. Some states have no accurate cost figures available but indicate that it is an expensive item; practically all the states which replied feel it is an important and costly problem.

ROETH



CONCRETE VIBRATORS
MOUNTED ON WHEELBARROW CHASSIS
Write for details and prices
ROETH VIBRATOR CO
1737 Farregut Ave., Chicago 40, Ill.

All but one of the states replying has suffered damage to its mowing equipment from cans and bottles, and some report injury to maintenance men who stepped on broken glass or the sharp edges of cans or junk. This, too, is expensive.

In material prepared for a radio broadcast, the Missouri State Highway Department called the public's attention to the fact that the \$190,-

000 it spends annually for roadside cleanup would pay for 29.5 miles of new farm-to-market roads, or it would have paid for a recently let contract for resurfacing with asphaltic concrete 10.9 miles of main highway. In one case, near a small town in Missouri, eight truckloads of trash were picked up along one mile of roadway, at a cost of \$125. In another, twelve truckloads were picked up along a 10-mile section. The average cleanup yield in that state is a truckload per mile of highway.

Who Are the "Litterbugs"?

There are two types of "litterbugs". There are the people who deliberately use the roadsides as a "dump" for household or business garbage and junk. Then there is another, and probably much larger, group made up of the thoughtless and untidy, people who would be horrified at the idea of using the roadside as a gar-

bage or trash dump but who think nothing of tossing papers, empty boxes, or beer cans out the car window as they ride along enjoying the beautiful scenery.

The problem varies, of course, in different areas. Roadsides near small communities and resorts which lack adequate refuse-disposal facilities are likely to become the dumping ground for household garbage and trash. Urban highways or the very rural routes receive mainly litter and picnic leftovers. Hotdog stands and other roadside eating places, wherever located, contribute to the debris.

How to Tackle the Problem

There are two methods of attack on this problem: (1) lowering the cost of cleanup, probably through mechanization (this has been done successfully in such other operations as grading, roadside seeding, and

(Continued on next page)



...now it's better than ever! the OLIVER Model "B" Crawler WITH WARE LOADER

Long considered the finest tractor-loader combination in its class, the Oliver-Ware Model "B" is now built for even greater performance. There are now 5 lower track wheels instead of 4, and the front idler wheel is considerably larger. This means you get more track on the ground, greater stability, more traction, easier handling all the way around. It means faster loading cycles, more work done per day, lower costs and more profits for you.

You still get the hydraulically-controlled Ware loader—designed and built exclusively for the Oliver

Model "B" Crawler. 110° bucket rotation and 28° "tilt back" give you a full bucket every time. Bucket level is automatically maintained when lifting load, preventing wasteful spillage. You can control speed of discharge. And, even with the "tilt back" action, you still have a 32° (from vertical) dump angle... a control range no other loader can surpass.

For complete information on how the Oliver-Ware Model "B" tractor loader can cut costs for you, see or write your Oliver Industrial Distributor.

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois



A complete line of industrial wheel and crawler tractors

Roadside Cleanup Costly but Essential

(Continued from preceding page)

mulching); and (2) a long-range program of changing the public's habits through legislation and education.

In most states, roadside cleanup is a hand-labor operation. A crew of men, with a truck, works along the highway, raking or picking up the litter and depositing it in the truck. Three states report using a leaf-collector machine, but it cannot handle bottles and cans without damage to the mechanism.

California has developed a roadside "vacuum cleaner" based on the Good Roads leaf collector, with modifications to permit bottles, cans, and similar trash to drop directly into the unit without passing through, and thereby damaging, the fan. This unit is still in the experimental stage; its use thus far has reduced the number of men required for cleanup but, California reports, there is still too much hand labor needed to collect the litter in windrows for the machine to pick up.

The questionnaire replies, for the most part, indicate the need for some type of commercially developed cleanup equipment, provided, of course, both its purchase and operating costs can be kept reasonable. It should be a relatively simple challenge to the ingenuity of equipment manufacturers to devise a unit which would pick up all kinds of litter—paper, boxes, cans, etc.—from a wide area quickly and economically.

Is Legislation a "Cure"?

In the long-range objective of changing the public's habits and thus eliminating, or at least minimizing, the problem, there are three parts in the program: (1) legislation; (2) public education; and (3) provision of sufficient trash receptacles or disposal areas.

A number of states have laws which make it a misdemeanor, punishable by fine, to dump trash, garbage, and junk along the public ways. But legislation of any kind is only as effective as its enforcement. Lack of proper enforcement—in many cases, of the means of vigilant enforcement—lessens the effectiveness of this type of "cure". However, one state—Vermont—reports that posting on its main roads copies of the Act of its Legislature imposing a \$50 fine for throwing trash along the highways has, in two years, accomplished more than any other one thing in cleaning up its roadsides.

Several states suggest that more severe punishment of offenders who are caught, and more publicity about such cases, would be helpful.

Public Education

In the last analysis, the real solution to the problem lies in educating the public. Most states report some use of roadside signs, newspaper stories, spot radio announcements, and similar means to bring the matter to the public's attention and engender a greater responsibility in keeping the roadsides clean. But the amount and cost of roadside cleanup indicate that these measures must be intensified and much more widespread before the program will be really effective.

It seems to be the consensus that the educational program should be concentrated on the young. "As the twig is bent, so the tree will grow." Work through the children is one way of educating the parents as well as inculcating neatness and respect for public property in the young people.

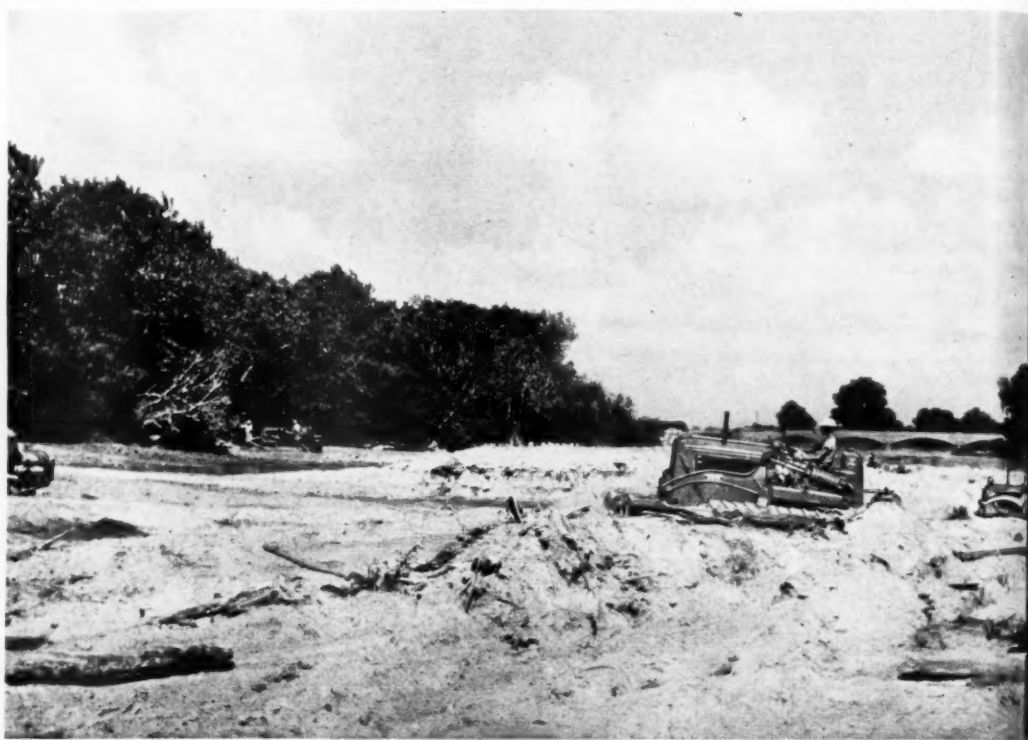
The ways of reaching the children are many—through the schools, Scouts, 4-H clubs, Campfire Girls, and other youth groups, by means of posters and pictures in the schools and meeting places, films, talks, educational leaflets, and essay and poster contests.

The adults, however, should not be ignored. Talks and distribution of

posters and other material to Garden clubs, Rotary, Lions, and other service clubs, Parent-Teacher Associations, church groups, Home Demonstration groups, conservationists, can not only "educate" them but will also stimulate sponsorship of contests among the children.

Exhibits at fairs, flower shows, expositions, and meetings can reach a great many people with the message of cleaner roadsides. For example, the Connecticut State Highway Department had a simple attractive exhibit at the Conservation Conference of the Natural Resources Council of Connecticut held recently in Hartford. The main panel of the exhibit

was headed "Clean Roadsides Are Pleasing". On the panel were mounted large photos of a clean and a littered roadside, some humorous cartoon-type posters dramatizing the roadside cleanup problem, and signs emphasizing its cost. At the sides and in front of the panel, a few evergreens and native shrubs created a pleasing landscaped effect. In a prominent spot in front of the panel was one of Connecticut's dark-green trash barrels (half size) bearing the legend "Deposit Rubbish Here—Help Keep Our Roadsides Clean". A half-size picnic table at one side provided a place for folders for free distribution. These single-sheet folders have



REMAKING A RIVER BED. The channel of the Arkansas River is being realigned by this fleet of International crawlers owned by the C. W. Kelley Transport Company, Inc., and Rush Construction Company, shown cutting new channel through section of island.

Speeds up Sleepy River



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a reproduction of a cartoon poster on the litter theme on one side; on the other is information on the cost of roadside cleanup and a plea for public cooperation in keeping the roadsides clean.

Enlistment of interest and cooperation of local newspapers and radio stations on an even larger scale is essential.

Such educational programs need not be costly. The potential results are well worth the comparatively small investment in money, time, and effort.

Where Will the Litter Go?

Since people have, and always will

have, a certain amount of trash to dispose of, neither legislation nor education will be effective unless there are well defined and accessible places for trash disposal. Some states place trash barrels at regular intervals along the highways, at logical stopping places or turnouts.

Here the roadside park or picnic area makes a contribution to the solution of this problem. By supplying a place to stop and eat, and trash receptacles for the picnic litter and leftovers, much debris which would otherwise be scattered along the roadsides is collected there.

Gas stations, roadside stands, and eating places should be strenuously

urged to help by providing trash cans and encouraging their patrons to use them. Another suggestion is that an appeal be made to beer, soft-drink, and candy producers to carry on their containers or wrappers a notice such as "Keep Our Roadsides Clean—Please Dispose of This Container in a Trash Receptacle".

Minnesota reports that one chain of hamburger stands—the White Castle System, Inc.—has already started such a public-education program. It hands to its customers with "take-out" orders a little printed card calling attention to the sanitary protective bags and containers it provides, and urging the public to

dispose of them in trash receptacles at its parking lots or elsewhere instead of littering the streets and highways. The intent and public-mindedness of this step are very commendable; the means, however, have one drawback. A card, instead of a notice printed on the bag or container, only provides another piece of litter in the case of those who don't heed its injunction or can't find a trash can handy.

Example Important Too

People are often more susceptible to example than to precept. It follows, then, that the cleaner and more attractive our roadsides are, the less likely people will be to litter them.

It Can Be Done

The roadside-litter problem is basically a human one. And humans rarely achieve perfection in any phase of life. It cannot be expected that the roadside cleanup problem will be entirely eliminated. But through an intelligent and intensive program of public education, enforcement of legislation, provision of adequate trash-disposal facilities, and good example, it is believed that cleaner, neater roadsides at less cost to the highway departments can be achieved.

Dynamite-Storage Hut

A welded-steel portable warehouse for storing dynamite near large construction jobs is available from Dravo Corp., Neville Island, Pittsburgh 25, Pa. The Transporter can be used indefinitely and eliminates the cost of erecting and dismantling temporary storage facilities.

The container has a capacity of 275 cubic feet. It is 6 feet 5½ inches high with skids, 7 feet 9 inches long, and 6 feet 5 inches wide. The double doors are of labyrinth construction, making them weatherproof without gaskets. It may be dragged by a tractor for short distances. Over longer distances, it can be placed on a truck or railroad car.

As a safety precaution, wood studding keeps cases of high explosive from contacting the metal walls inside. Grounding reduces hazard of lightning and static sparks. Although weatherproof, the storage unit is ventilated through side-wall openings at floor level. In use it is mounted on concrete platforms or timbers. When a container is subject to the direct rays of the sun, a roof may be installed as a sun shield.

For further information write to the company or use the Request Card at page 18. Circle No. 467.

Insulated-Pipe Bulletin

A bulletin on its presealed insulated pipe for underground and weather-exposed piping systems has been issued by Durant Insulated Pipe Co., Warren Way & Bay Road, P. O. Box 88, Palo Alto, Calif. The pipe can convey hot or cold liquids or gases with steam pressures up to 1,000 psi. The bulletin gives applications, special features, design, construction, fabrication, and specifications.

This literature may be obtained from the company by requesting Bulletin 6C, or by using the Request Card at page 18. Circle No. 536.



RIVER CROSSING. International crawlers reach islands to start rechanneling work by building earth ramps across the river. They worked in sand and water throughout the summer with no downtime.



CHANGING THE CHANNEL. Operator Kie Bayless says: "These TD-14As have more 'soup' than any other tractor their size. They just plain move more dirt."

International crawlers speed up flow of Arkansas River as safeguard for Kansas wheat belt

Flow of the long and lazy Arkansas River is being speeded up one-third along a 30-mile stretch in Reno County as a flood prevention measure aimed at safeguarding the rich wheat belt in this Kansas County.

When the river rises just six feet, and it does periodically, it spills all over the wheat fields and causes extensive damage.

But county officials feel they have a solution. This year they launched the first portion of a proposed three-year plan involving some \$50,000 expenditure each year for elimination of bad turns and islands in the river channel. This improvement will increase the flow of the river from 4.06 feet per second to 5.41 feet per second or more and it is felt this faster flow will be sufficient to keep the river in its channel.

Dirt moving for the first-year phase of the improvement is being handled by Rush Construction Company and C. W. Kelley Transport Company, Inc., with rugged red International TD-18A and TD-14A crawlers.

H. M. Dunsworth, job foreman, reports:

"We lug these TD-18As and TD-14As down all the time. They not only have the power and maneuverability to do a bang-up dirt moving job, but that high-speed reverse sure makes us money on this river job as lots of the dozing calls for long pushes. These Internationals, and some have been used for years, have worked over two months here under miserable conditions with absolutely no downtime."

Ask your International Industrial Distributor for details on the whole International line of money-making crawlers. Ask him, too, about his fast, ready service and speedy parts delivery. Get all the answers . . . you'll want International "Power that Pays" from now on!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS



INTERNATIONAL

POWER THAT PAYS



Diesel Wheel Tractor

A new diesel wheel tractor is announced by the M-R-S Mfg. Co., Box 336, Flora, Miss. The M-R-S 190 is said to have extra drive-axle weight which increases the normal ground-contact area of its low-pressure tires. The tractor self-loads a

12-yard truck scraper and serves as a prime mover for a push-loaded scraper up to 20 yards truck. The tractor-scraper combination has a 28 to 34-foot turning radius, an advantage on narrow secondary roads.

The manufacturer stresses the versatility of the tractor. It may be used with the Mississippi wagon for high



The M-R-S 190 self-loads a 12-yard truck scraper or pulls a 20-yard truck scraper push-loaded. The tractor-scraper combination has a 28 to 34-foot radius.

20 Second

START

FOR STUBBORN DIESELS with

STAVIS STARTING FLUID

Pour or spray into air intake. Used by diesel operators. Sure, quick starts. Save battery everywhere. Some distributor territories. Save time. Save money. territories still open. Write for details today.

\$30. PER CASE SHIPPED PREPAID

STA-VIS OIL COMPANY 202 EAGLE ST., ST. PAUL 2, MINN.

payloads without exceeding the 18,000-pound axle loads of most state laws, and also with rippers, compaction rollers, and for general utility.

A Cummins valve-in-head 275-hp diesel engine powers the unit. Transmission permits five speeds forward and one reverse. Fuel-tank capacity is 74 gallons.

The tractor is 194 inches long, 100 inches wide. Tire treads are 78 and

74½ inches wide for front and rear wheels respectively.

For further information write to the company, or use the Request Card at page 18. Circle No. 466.

Folding Crane Boom

A new folding crane boom is available for the truck-mounted Hopto Digger. The TM model is intended for general light-duty crane work where mobility is important. It mounts on any standard 1½-ton or larger truck.



The unit is self-powered. It has a Wisconsin V-F4 power unit and a Vickers hydraulic system. Operating pressure is 1,000 psi. It lifts 1,500 pounds 23 feet on a 15-foot radius. Variable speed swing of 180 degrees operates without use of brakes, clutches, or drums.

For further information write to the Badger Machine Co., 1124 W. 5th St., Winona, Minn., or use the Request Card at page 18. Circle No. 434.

Truck-Shovel Catalog

A catalog on truck shovels has been issued by the Quick-Way Truck Shovel Co., Denver, Colo. Four models discussed have 3 to 10-ton capacities and mount on 1½ to 10-ton standard trucks.

Convertibility is stressed as the units are shown in use as cranes, trench hoes, scoops, front-dump shovels, and draglines and clamshells.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 429.

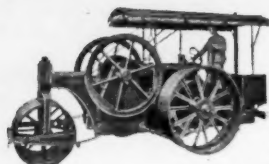
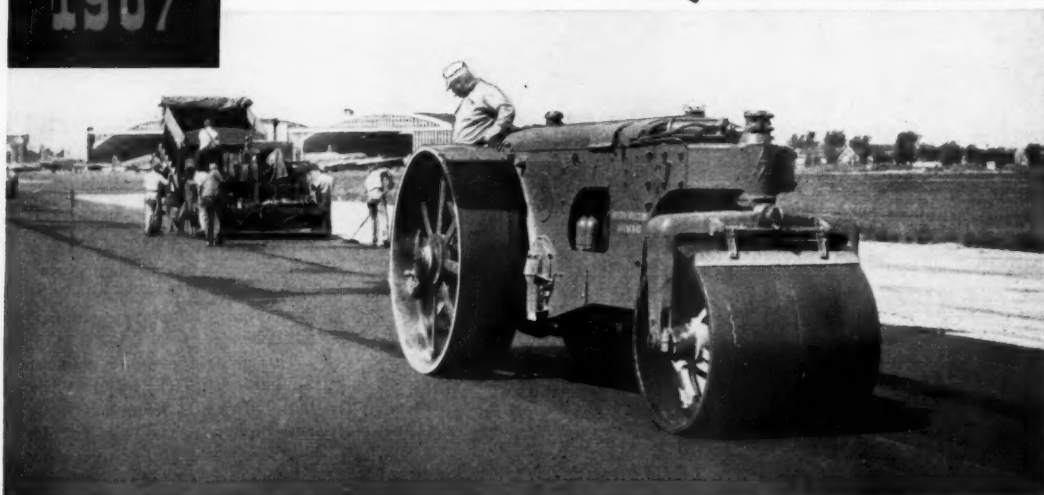
Robinson Buys Stowe-Fuller

The Robinson Clay Product Co., Akron, Ohio, recently purchased all property and assets of Stowe-Fuller Refractories Co., with plants located at Alexandria, Pa., and Strasburg, Ohio.

Since 1936 the two companies have been closely affiliated, and with the present consolidation, no radical changes of personnel are expected.

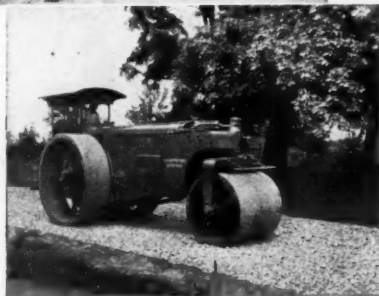
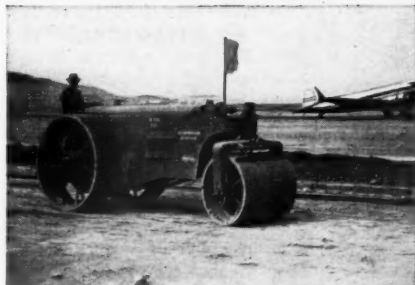
SINCE 1907

Famous for Dependability



They said it of the "one-lunger" of 1907, and

they say it today . . . "Austin-Western rollers stay on the job day after day, and month after month, with less time lost for mechanical adjustments, maintenance and repair." That's **DEPENDABILITY!** Add to it the precision job of rolling that results from such things as Proper Weight Distribution, Vibrationless Power Units and Smooth Acting Clutches, and you have everything needed for top grade performance. The Autocrat is made in 10- and 12-ton sizes. Each has full-length side plates for maximum rigidity; low center of gravity for smooth operation, and hydraulic power steer. Each may be had with gas or diesel engine. Special equipment includes lights, sprinkling system, canopy top and powerful hydraulic scarifier.



Austin-Western

**Power Graders
Road Rollers • Motor Sweepers**



Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.

Construction Equipment Division

Convertible Spreader

A spreader for both seal-coat work and ice control is offered by Century Engineering Co., Waukesha, Wis. The hydraulic Spread-All is installed on a dump truck.

In seal-coating the material is guided from the trough through channels formed in a steel apron. An agitator in the trough breaks up and moves material so that it falls in a uniform pattern to form a mat from 20 inches to 12 feet in width. This range in width of spread makes it a suitable unit for spreading gravel on shoulders or for use in seal-coating bituminous-bound shoulders.

When used for ice control, a spinner is installed in place of the channelled apron. This spinner is level with the roadway at all times and is said to prevent the spray of material from falling on passing cars. In-



The Spread-All can be used for seal-coating and ice control.

termittent sanding for bus stops and intersections can be done while the truck maintains traffic speed. The truck driver controls the speed by a

fingertip lever on the dashboard.

For further information write to the company, or use the Request Card at page 18. Circle No. 430.

Stud-Welding Booklet

A booklet on stud welding has been released by the Nelson Stud Welding Division, Gregory Industries, Inc., Toledo Ave. & E. 28th St., Lorain, Ohio. The Nelweld method of fastening is an electric arc-welding process that end-welds fastener studs to steel surfaces with a gun.

Illustrations show the welding gun on various typical construction operations such as insulation, concrete reinforcement, and installation of roofing and siding materials. Special studs are made by the manufacturer for each kind of work. The equipment operates off standard electric or gas-driven dc welding generators or the Nelwelder battery unit which requires only a 110-volt ac outlet.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 550.

MIXERMOBILE DISTRIBUTORS

ALA.—Construction Equipment Co., 2921-2 Avenue, B. Birmingham; Mobile Elevator & Equipment Co., Inc., 100 North Water St., Mobile 5. S. PHOENIX. ARIZ.—Equipment Sales Co., 720 So. 10th St., Phoenix. ARK.—Choctaw, Inc., P. O. Box 1300 1300 Bond St., Little Rock. CALIF.—Bronson Equipment Co., 1310 N. Rosemead Blvd., El Monte; Mixermobile Co., Inc., 245 1/2 South Western Ave., Los Angeles 4; Mixermobile Sales & Service, 33 - 23rd Avenue, Oakland 4; Growers Tractor & Equip., Inc., 1300 "U" Street, Sacramento 7; Tulare City Tractor Co., Visalia. COLO.—Constructors Equipment Co., 3707 Downing St., Denver. CONN.—Hedge & Matthews Co., 391 Prospect Street, East Hartford; Hedge & Matthews Co., 70 Orange Street, West Haven. FLA.—Neff-Thomas Mach. Co., 1920 N. W. Miami Court, Miami 36. GA.—Tractor & Mach. Co., 470 Glenn St., S. W. Atlanta. IDAHO.—Western Equipment Co., 4009 Fairview, P.O. Box 1456, Boise; Western Equipment Co., P.O. Box 96, Idaho Falls. ILL.—Arrow Contractors Equip., 2020 West Walnut St., Chicago 12. IOWA.—Heiner-Harker Co., 1810-18th Ave., S. W., Cedar Rapids; Anderson Equipment Co., 308 S. Virginia St., Sioux City. KANS.—Victor L. Phillips Co., 3611 N. Broadway, Wichita. LA.—Southern States Equip. Co., 425 Celeste Street, New Orleans 11. MAINE.—Hedge & Matthews Co., P.O. Box 120, Bangor; Hedge & Matthews Co., 505 Prairie St., Portland; Hedge & Matthews Co., Outer State Street, Vassal. MASS.—Hedge & Matthews Co., 754 Southbridge St., Auburn; Hedge & Matthews Co., 285 Dorchester Ave., Boston 27; Hedge & Matthews Co., 85 Spring Street, West Springfield. MICH.—Contractors Machinery Co., 333 Midland Avenue, Detroit 3; Contractors Machinery Co., 330 Menne Ave., Grand Rapids 2. MINN.—Minneapolis Equipment Co., 520 Second St., S. E., Minneapolis. MISS.—Choctaw, Inc., Hwy. 80 W. & Gallatin, Jackson. MO.—Victor L. Phillips Co., 1800 Baltimore St., Kansas City 8; O. B. Avery Co., 1525 Macklind Ave., St. Louis 10. MONT.—Westmont Trac. Equipment Co., 150 East Spruce Street, Missoula. NEBR.—Anderson Equipment Co., Inc., 616 Merchants Nat'l Bank Bldg., Omaha. NEV.—H. Waldman Motor Equipment Co., 1715 E. Fremont St., Las Vegas; Mack Truck Sales, P. O. Box 1813, Reno. N. H.—Hedge & Matthews, 80 S. Main St., Concord. N. J.—E. H. Klenbenstein Co., 1099 Hendricks Causeway, Ridgefield. N. MEX.—Lively Equipment Co., 2601 N. 4th, P.O. 784, Albuquerque. N. Y.—Slide Tractor Co., 924 Broadway St., Albany 4; Rupp Equipment Co., 101 Great Arrow Building, Buffalo 16; Dodge & Hammond, Inc., 720 Garrison Avenue, New York 59; Credle Equipment, Inc., P.O. Box 110, Potsdam; Rupp Equipment Co., 1011 Buffalo Road, Rochester; Credle Equipment, Inc., 300 N. Genesee Street, Utica 4. N. CAR.—Contractors Service, Inc., 317 West Warrington, Charlotte; Mitchell Distributing Co., 5405 Hillshire Blvd., Raleigh; Mitchell Distributing Co., Spruce Pine. N. DAK.—Myhra Equipment Co., 1425 Front Street, Fargo. OHIO.—Bode-Finn Co., 2650 Spring Grove Ave., Cincinnati 14; Contractors Motor Unit, Inc., 1825 24th Street, Cleveland; W. T. Walsh Equipment Co., 12750 Buxus Road, Cleveland; Lorenz Equipment Co., 247 West Rich Street, Columbus 8; G. W. Clements Equip. Co., 476 Avondale Avenue, Columbus; Bode-Finn Co., 1518 E. First Street, Dayton 3; Construction Mach. & Supp., 128 S. St. Clair Street, Toledo 4. OKLA.—Victor L. Phillips Co., 1222 West Main Street, Oklahoma City; Victor L. Phillips Co., 1101 East Archer, Tulsa. ORE.—Mixermobile Distributors, Inc., 8027 N. E. Killingsworth St., Portland 20. PENNA.—Furnival Machinery Co., P.O. Box 706, Harrisburg; Furnival Machinery Co., Lancaster Avenue at 34th, Philadelphia 31; Alex Watson Equipment Co., P.O. 57 Allegheny City, Pittsburgh. R. I.—Hedge & Matthews Co., 200 New Port Avenue, Providence. S. CAR.—Van-Lett, Inc., 430 Meeting St., W. Columbia. S. DAK.—Stan Houston Equipment Co., 309 E. 12th St., P.O. Box 90, Sioux Falls. 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McGraw, Ltd., P.O. Box 335, 6 McDougall Court 10062-100 St., Edmonton, Alberta; Contractors Mach. & Equip., Ltd., 194 Barton Street East, Hamilton, Ontario; Dietrich-Collins Equipment Co., 800 S. W. Marine Drive, Vancouver, B. C.; Automotive Products Co., Ltd., 3282 Wellington Street, Montreal, Quebec; Modern Machinery, Ltd., 120-4th St., West, Quebec City, Quebec. EXPORTERS—Columbia Exporters, Inc., 1105 S. E. Harrison St., Portland; North Pacific Corp., 1805 N. E. 40th Ave., Portland.

4319 Yards in 31 Hours!

WITH NEW 4-WHEEL DRIVE, 4-WHEEL STEER



Right:
4-Wheel Drive
Scoopmobile
Model LD-10
loading sand



WITH ALL FOUR WHEELS supplying the driving power, this SCOOPMOBILE actually scooped, carried and loaded the amazing total of 4,319 yards of wet sand in 31 hours! Figure for yourself the advantage this performance will give you when submitting bids — how much more profitable your jobs will be.

Driving power is applied through 3-to-1 planetary gearing on all four wheels, providing added power and eliminating torque strain on axles and transmission. Center pin power steering makes maneuvering easy and quick.

The 4-wheel drive SCOOPMOBILE comes in two models: LD-10 with 1 1/2 to 2 yards capacity (left, above), and LD-5 with capacity of 3/4 to 1 yard (left, lower). Both are built to take the punishment of long, tough service, with weight built into the machine where strength is most important.

For further information on this new but thoroughly job tested 4-wheel drive SCOOPMOBILE, see your Mixermobile representative, or write us.

Built to do your job better, faster, easier

Dumping height with standard boom, 9 ft. Powerful industrial type gasoline engine, with diesel power optional.

Road speed to 30 MPH under its own power, or can be towed at any speed desired.

Reversing transmission, 8 speeds forward and back.

All-hydraulic controls including power steering.

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4-Wheel Drive Scoopmobile • 4-Wheel Drive Tractor
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Economical Design Modernizes Old Road

Hot-Mix Asphaltic Concrete Laid Over Bituminous Macadam
To Widen, Strengthen Pavement

• NEW YORK State Route 5, the scenic route along the south shore of Lake Erie, runs westerly from Buffalo to Erie, Pa., and Ohio. This route is located so close to the lake that it attracts many tourists going north and east to Canada. It also carries heavy truck traffic including movements of steel from the Bethlehem Steel Co. at Lackawanna and the fabricating plants in Erie and west toward Cleveland. Under this traffic the old 20-foot pavement was badly in need of strengthening and widening. Following the policy of salvaging old pavement wherever practical and possible, the state engineers at District 5 in Buffalo prepared plans to utilize the major part of the old pavement.

Subsequently the state of New York let a contract for widening and resurfacing 34 miles of this route from Silver Creek westerly to the Pennsylvania state line. The contract was awarded to Lancaster Development Co., of Dunkirk, N. Y., for approximately \$1,800,000. The old pavement was of three major types, constructed in the late 1920's. About 8 miles was a reinforced-concrete pavement which had been surface-treated or covered with about 2 inches of plant-mix bituminous material. Another section, about 17 miles in length, was built originally with a concrete base and a plant-mix bituminous top. The third section, about 9 miles in length, was constructed originally as a penetration-macadam road and parts had been surface-treated or covered with a 2-inch road-mix top.

During the intervening years these old pavements became badly distorted and broken, due principally to the heavily loaded trucks plying in interstate traffic on New York State Route 5—the corridor across the northern part of Chautauqua County. The resurfacing and maintenance work which had been done on these roads was not sufficient to prevent cracking and pumping or disintegration of old pavement. To stop the rapid deterioration it was found necessary to add a 4-inch strengthening course of bituminous macadam over the old pavement and the extra widening, and cover this with 2½ inches of hot-mix asphaltic concrete. The entire job was done under traffic and completed in the working season of 1952. Although U. S. Route 20 about a mile south parallels Route 5, a great deal of traffic continued to follow Route 5 although it was delayed by 1-lane traffic at the work areas. The traffic preferred Route 5 because it bypasses many of the towns through which Route 20 passes.

Economical Salvage

Up to about 5 years ago the method of salvaging old pavement con-

sisted in laying 2½ inches of asphaltic concrete directly on the old slabs. This method proved insufficient because the cracks soon came up through the new layer and the pumping and deterioration continued. About 1947, several sections of heavily traveled U. S. Route 20 southeast of Buffalo were first strengthened with a layer of 4-inch



This big plow mounted on a D7 was made by Lancaster Development Co., Dunkirk, N. Y. Here it cuts 16-inch-deep x 24-inch-wide trenches along both sides of the old pavement for base widening on New York State Route 5.

bituminous macadam prior to resurfacing with asphaltic concrete. This overlay of macadam had enough strength and flexibility to prevent cracks from coming up through the

new wearing course. The results were so satisfactory that more and more macadam overlays had been specified each year. The bituminous-macadam overlay has high stability

KEEP PROFITS UP— COSTS DOWN

See your CP Distributor

An unbeatable combination . . . your CP distributor plus efficient, cost-cutting Chicago Pneumatic equipment . . . a team that really pays off! Whatever your problem, there's a qualified CP distributor nearby to help recommend and select the CP equipment best suited for your specific requirements.

For over 50 years Chicago Pneumatic equipment has gained industry-wide acceptance because it has been designed with a rugged quality that insures long, trouble-free operating life with a minimum of maintenance.

Call or write your local Chicago Pneumatic Distributor for more complete information today.



CP RING VALVE BACKFILL TAMPER — Ideal for extra-heavy tamping, the easy-to-operate Chicago Pneumatic No. 4 Ring Valve BACKFILL TAMPER assures a firmer, more uniform job — cuts costs of handling excavated surplus. Other models available for average or heavy work.

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Mobile — Burford Toothaker Tractor Co.
Montgomery — Burford Toothaker Tractor Co.

ARIZONA

Phoenix — Western Machinery Co.

ARKANSAS

Little Rock — Little Rock Road Machinery Co.

CALIFORNIA

Fresno — Contractors Equipment & Supply Co.
Los Angeles — Shaw Sales & Service Co.
Riverside — Shaw Sales & Service Co.
San Diego — Shaw Sales & Service Co.
San Francisco — Western Traction Co.

COLORADO

Denver — Gunderson-Taylor Machinery Co.

CONNECTICUT

Hartford — Bleiler Equipment Co.
Plantville — Tyler Equipment Corp.
Stamford — M. F. Taylor

FLORIDA

Jacksonville — Vern Wheeler, Inc.
Miami — L & G Machinery Supply Co.

GEORGIA

Atlanta — Yancey Bros. Co.
Augusta — Yancey Bros. Co.

ILLINOIS

Chicago — Equipment Corporation of America
Rockford — Wisner, Inc.
Rock Island — Wisner, Inc.

INDIANA

Evansville — Diamond Supply Co.
Ft. Wayne — MacAllister Machinery Co., Inc.
Indianapolis — MacAllister Machinery Co., Inc.

IOWA

Cedar Rapids — Spreitzer, Inc.
Des Moines — Gibbs-Cook Equipment Co.
Mason City — Gibbs-Cook Equipment Co.
Sioux City — Sioux Machinery and Supply Co.

KENTUCKY

Louisville — Emmett C. Watson

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MAINE

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MASSACHUSETTS

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Perrin-Seamans & Co., Inc.
E. Longmeadow — Tyler Equipment Corp.

MICHIGAN

Detroit — Schuster Equipment Co., Inc.
Grand Rapids — Miller Equipment Co.
Iron Mountain — W. B. Thompson Co.
Saginaw — Krueger Machinery Co.

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Minneapolis — Ruffridge-Johnson Equipment Co., Inc.

MISSISSIPPI

West Jackson — Equipment Inc.

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NEBRASKA

Omaha — Fuchs-Clayton Machinery Co.



An Apsco elevating base spreader lays the slag for the bituminous-macadam course 12 feet wide x 4 inches thick.

and costs less than plant-mixed asphaltic concrete.

Preliminary Work

When Route 5 was graded and paved in the late 1920's the profile followed very closely the existing ground surface, with the result that there were many depressions in the grade where streams ran into Lake Erie. To improve sight distance many of these low spots were raised several feet with selected embank-

ment material. Where the grade was changed these sections required new bases. Where there were no grade changes the old pavement was widened on both sides with a 12-inch course of compacted bank-run gravel subbase covered with 4 inches of bituminous penetration macadam to bring it up even with the old pavement. The old portion and the widened portion were then strengthened with the 4 inches of bituminous penetration macadam. This was covered with 1½ inches of bituminous concrete 24 feet wide. Since the road was kept open to traffic during construction, the gravel widening was first brought up even with the old pavement. After the gravel had compacted under traffic for some time, the macadam widening was laid. The extra width was 4 inches of bituminous macadam laid in a trench cut in the compacted gravel subbase.

Slag for the macadam was laid



A Buffalo-Springfield roller fills and keys the macadam course with choke slag. On the left are filled voids; in the center, penetrated slag; and on the right, the old road.

with an Apsco spreader, compacted by two Buffalo-Springfield rollers, then penetrated with 1½ gallons of hot asphalt to the square yard. After the first penetration the surface voids were immediately filled with fine slag, rolled and opened to traffic. Following the first penetration,

½ gallon of asphalt per square yard was applied and more slag chips added. This brought the extra width up even with the old pavement. The slag was furnished by the Buffalo Slag Co., and the asphalt came from the New Jersey plant of the Cities Service Oil Co. and the Buffalo plant of the Socony Vacuum Oil Co.

After the widening was completed sufficiently far ahead, large-size slag (2-inch to 3-inch New York sizes No. 3 and No. 4) was spread with an Apsco base paver to a width of 12 feet over half of the old pavement and the macadam widening. This was first compacted with 2-axle and 3-axle Buffalo-Springfield rollers, then bound with 1.6 gallons of asphalt per square yard, filled with slag chips, and rolled. After this was opened to traffic for a week or so, another 0.4 gallon of asphalt and chips was applied and rolled. This left rather a knobby texture which provided a good bond for the first layer of asphaltic concrete.

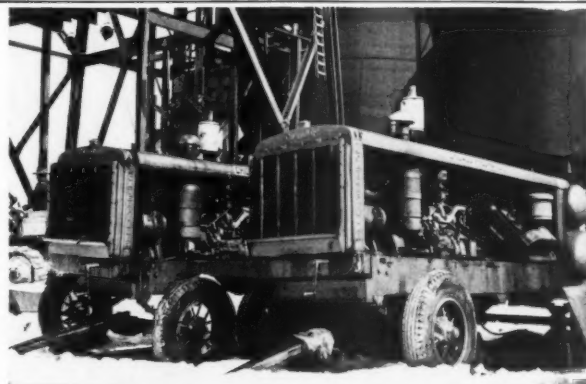
Asphaltic Concrete

Lancaster Development erected a new Hetherington & Berner asphalt plant at Dunkirk, N. Y., to process the asphaltic concrete for the entire 34 miles. This is a fully equipped plant with a 6,000-pound batch mixer. The asphalt was laid on the road one lane at a time through two Adnun Black Top Pavers. The plant capacity was such that two of these pavers were kept busy with a fleet of 22 trucks hauling to the pavers. The first or binder course of asphalt was 1¼ inches and the second or top course was ¾ inch thick. Each course was compacted and smoothed with 2 and 3-axle Buffalo-Springfield rollers. After each course was finished it was opened to traffic in about 4 hours.

Mass Production

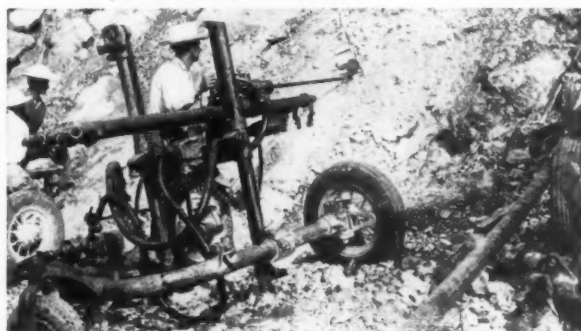
In order to complete 34 miles under traffic it was necessary for the contractor to use the most modern equipment. For trenching along each side of the pavement Lancaster Development built a mammoth plow mounted on a D7 Caterpillar tractor, which plowed the trench for the base widening in one or two passes. The Apsco side-delivery trench spreader then filled the trench with gravel, which was compacted with trench rollers. A narrow blade on the Caterpillar motor blade cut the trench for the 4-inch macadam widening. The slag for the macadam widening was laid with a trench spreader and the slag for the overlay with an elevating spreader—both Apsco. On the biggest day the elevating spreader laid 9,400 feet of macadam slag 12 feet wide. The slag

(Concluded on next page)



CP DIESEL AND GASOLINE DRIVEN PORTABLE AIR COMPRESSORS — Available in ranges from 60 cfm to 600 cfm, CP Portable Air Compressors incorporate the CP Gradual Speed Regulator which reduces engine speed proportionately when air demand falls off — insuring greater economy and minimizing wear.

CP WAGON DRILL — The G-300 has heavy-duty tubular chassis and drill carriage for stability and strength with minimum weight — assures greater flexibility and cuts down vibration. Takes full advantage of high drilling speed and rotation of the CP 4-inch 70-N Drifter — maintains correct alignment under the most adverse operating conditions.



CP-365 REVERSIBLE AIR IMPACT WRENCH

Ideal for faster preliminary bolting up of structural members and for maintenance of heavy construction equipment, the CP-365 has a 1¼ inch bolt capacity yet only weighs 32 lbs. — overall length is only 16¾ inches.



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Economical Design Modernizes Old Road

(Continued from preceding page)

chips were applied with a Flink spreader.

To lay 34 miles of 24-foot heavy-duty pavement for \$1,800,000, utilizing most of the old pavement, is an outstanding accomplishment in economical design. Furthermore the completion of 34 miles of widening and 3-course resurfacing, along with many grade corrections, in one year required efficient methods on the part of the contractor and much modern equipment, especially since traffic was maintained during construction.

Personnel

The designing and construction work was under the direction of Charles R. Waters, District Engineer at Buffalo for the New York State Department of Public Works. Frank J. Fuller and Kyron C. Balkin were Supervising Engineers. Clifford A. Stumm was Project Engineer. Bertram D. Tallamy is State Superintendent of Public Works.

Brushcutting Machine

A machine that cuts brush and undergrowth has been announced by Brushmaster Saw, Inc., 290 West St., Keene, N. H. The Brushmaster, operated by one man, is said to cut as much brush in a given period of time as six good hand cutters. It cuts briars, brambles, vines, brush, and stout saplings up to 4 inches in diameter.



The air-cooled 2-cycle motor runs a circular saw blade that can be replaced easily. The machine weighs 35 pounds and can be carried by one man by a sling suspension-type belt. No moving parts of the motor are exposed. Other safety features include: an angular bar which prevents the operator from moving into the blade; an engine throttle at the hip that gives quick engine control; and an automatic clutch that disengages the saw when the engine is idling.

For further information write to the company, or use the Request Card at page 18. Circle No. 486.

Shovel and Truck-Crane Data

An 8-page catalog on its Models 75A and 75B shovels and 75BT truck crane has been announced by Gar Wood Industries, Inc., Findlay Div., 36253 Michigan Ave., Wayne, Mich. It describes construction and operational features such as the fluid coupling which absorbs and cushions shocks. Other features include a right-angle gear drive which is com-

pletely sealed in oil and eliminates adjustments; power-actuated hoist clutches for ease of operation; heavy-duty conical rollers for eliminating pin strain and carrying the tipping loads; and power steering for easy turns.

The catalog points out that the 75's hoist, swing, and travel simultaneously. An independent chain crowd is said to reduce conversion time. The shovels have a 3/4-yard capacity in a standard and heavy-duty class and the truck crane is rated at 20 tons.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 549.

Ready for Snow and Ice

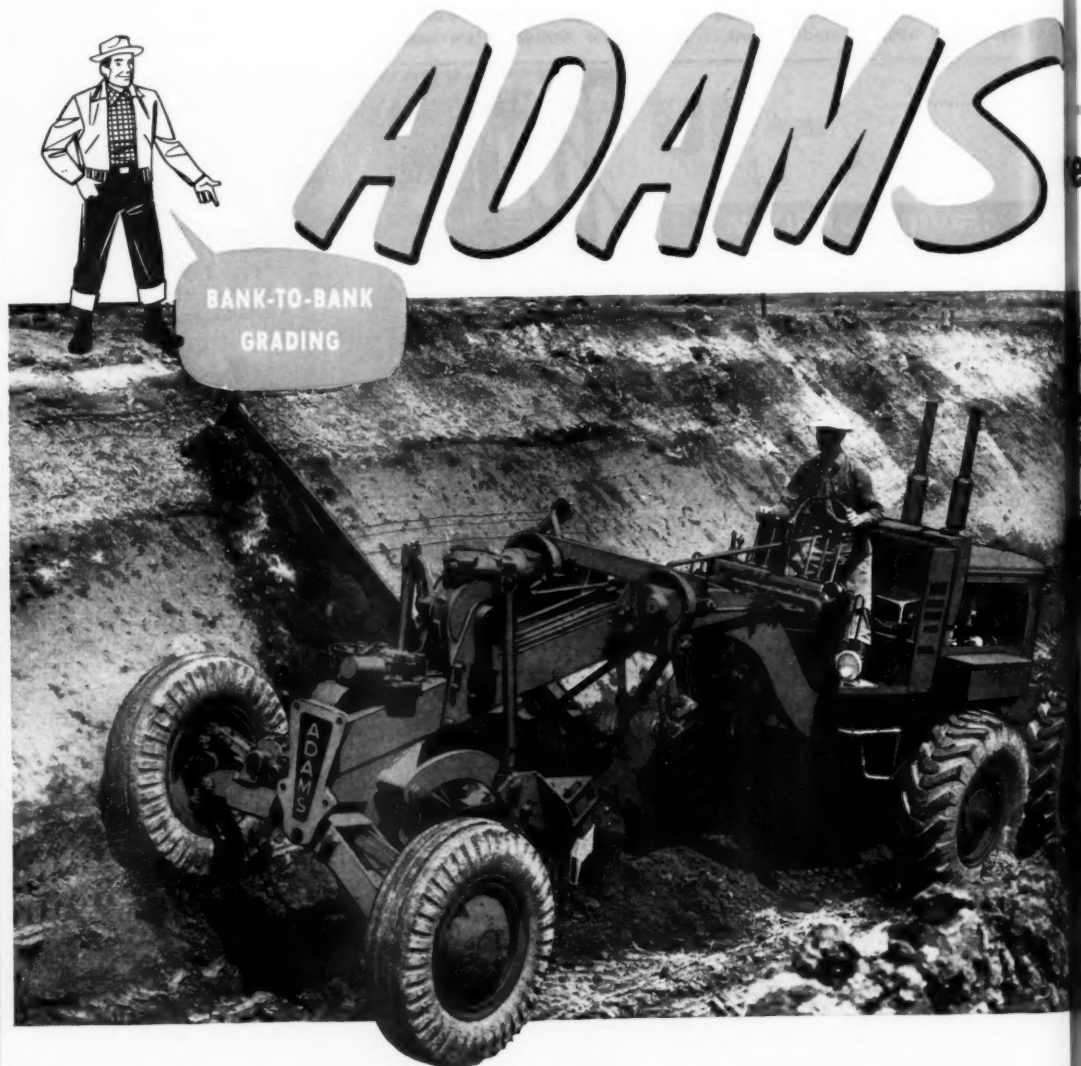
The size of the job confronting the New Jersey Highway Department in the event of a state-wide snow is said to be equivalent to cleaning a 2-lane roadway from Newark to California. For this reason the State has held a fleet of more than 700 units of mechanized equipment and 2,000 men in readiness since the beginning of winter.

In recent years the Department has spent nearly as much time and money on ice control as on snow removal. Last year approximately 35,000 cubic yards of sand, cinders, and stone grits were laid over icy surfaces to prevent skidding—an

operation which required 300 spreaders.

Commissioner Ransford J. Abbott warns motorists against passing abrasive spreaders until signaled by the equipment operator. Every driver should exercise extreme care and remember that the roadway ahead of the spreader is icy. He further cautions drivers to view all wet spots on the highway with suspicion since they may be icy. Tests conducted by the Department disclose that chilled pavements can form ice when atmospheric temperatures are well above the freezing point.

Safety Is No Accident!



● When you buy an Adams Motor Grader you get, first of all, the fastest, smoothest-performing, most versatile and dependable machine of its kind on the market . . . a machine capable of handling all types of grading operations with matchless efficiency and economy—bank sloping, ditch cutting, scarifying, sub-grading, fine finishing, mixing, etc.

Above and beyond these normal operations your Adams adapts easily to a wide range of other applications. In a matter of minutes, you can convert it into a powerful bulldozer. Equipped with the Elegrader, it becomes a fast, highly-efficient crawler or loading machine. And on snow-removal work your Adams is outstanding—handles everything.

Plus

ALL OF THESE BIG OPERATING ADVANTAGES

- 8 Forward Speeds . . . Flexible working range speeds work—increases output—provides high transport speeds.
- Wide Range of Blade Positions—Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
- Positive Action Mechanical Controls . . . Dependable, accu-

- rate adjustments—because they're geared . . . Easy steering.
- Ample Operating Clearances . . . Quick, easy adaptation to work . . . Operator comfort, convenience, efficiency.
- Fast, Easy Servicing Plus World-Wide Dealer Service . . . Saves time and money—results in less "downtime."

Compact Transmitter

A new hand-sized radio transmitter has been announced by Motorola, Inc., Communications & Electronics Division, 4545 W. Augusta Blvd., Chicago 51, Ill. The Handie Micro-Talkie weighs 1 pound 13 ounces, has a power output of 20 to 40 milliwatts, and a tested optimum range up to 5 miles. It operates in the 152 to 174-mc frequency band.

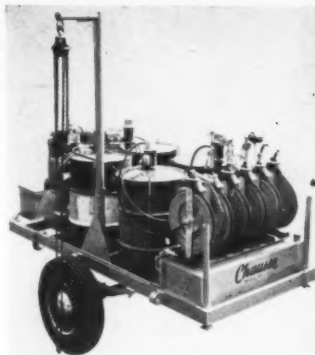
The complete transmitter, including self-contained dry batteries and microphone comes in a seam-welded housing finished with a gray automotive-type baked enamel. Over-all case dimensions are 7 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x 1 $\frac{3}{4}$ inches. A rigid chrome-plated loop

antenna doubles as the carrying handle.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 548.

Field Lubricator

A new trailer-mounted lubricator is made by the Chausse Mfg. Co., Inc., 4453 Fourteenth St., Detroit 8, Mich. Tanks on the unit dispense high-pressure grease, gear oil, and motor oil. A gasoline-engine compressor unit works the pumps mounted on the tanks and forces the lubricants into the dispensing hose reels.



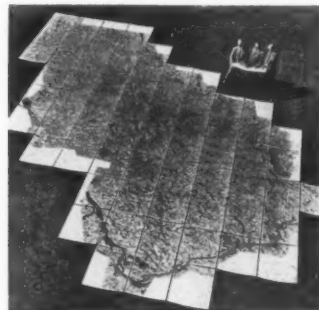
The manufacturer stresses the compact arrangement of components of the unit. In front, over the tow-

hook there is the toolbox, and immediately behind, the compressor. Behind this is the storage bed for four types of oils and greases. In the rear there are six reels, four for oils and greases, one for antifreeze solution, and one for air. The reels are set on the 40-gallon water or antifreeze-solution tank.

For further information write to the company, or use the Request Card at page 18. Circle No. 477.

Photo-Maps Are Up-to-Date

The problem of acquiring and maintaining complete up-to-date maps to use in company planning and construction projects has been solved by Philadelphia Electric Co., Philadelphia, Pa. The territory served by the company has undergone tremendous change as the result of increased population and industrial expansion since the time most available maps were compiled. Therefore, Philadelphia Electric is remapping the entire 4-county Philadelphia suburban area to its own specifications, drawn up by its engineers in consultation with specialists in the utility-mapping field.



The aerial photo-map used by Philadelphia Electric Co. to make work maps could cover the side of a 2-story house.

The procedure is as follows: first an aerial survey is made with a resulting photo-map at a scale of 800 feet to an inch. Base drawings, made from the maps, are reproduced on plastic sheets and show highways, rivers, streams, and railroads; and municipal, county, and state boundaries. From the plastic drawings, reproductions can be made photographically at scales varying from 100 to 3,000 feet to an inch.

The lettering is set by linotype and printed on clear plastic strips, which are placed on the original master maps, and eventually become part of the ensuing plastic reproductions.

Aero Service Corp. of Philadelphia made the aerial survey and photo-map.

Wall Chart for Welders

An 18 x 27-inch wall chart for welders is offered by All-State Welding Alloys Co., Inc., 249-55 Ferris Ave., White Plains, N. Y. It is a guide for selecting the particular alloy and flux which will best serve the welding, brazing, soldering, cutting, or tinning job at hand and at the least cost. Data on 41 alloys and appropriate fluxes are arranged for making accurate selection as nearly automatic as possible. All of the company's alloys and fluxes are covered according to the metal upon which work is to be performed.

This chart may be obtained from the company, or by using the Request Card at page 18. Circle No. 547.

the motor graders of many applications— real all-around, year-around utility



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CASTING OR LOADING
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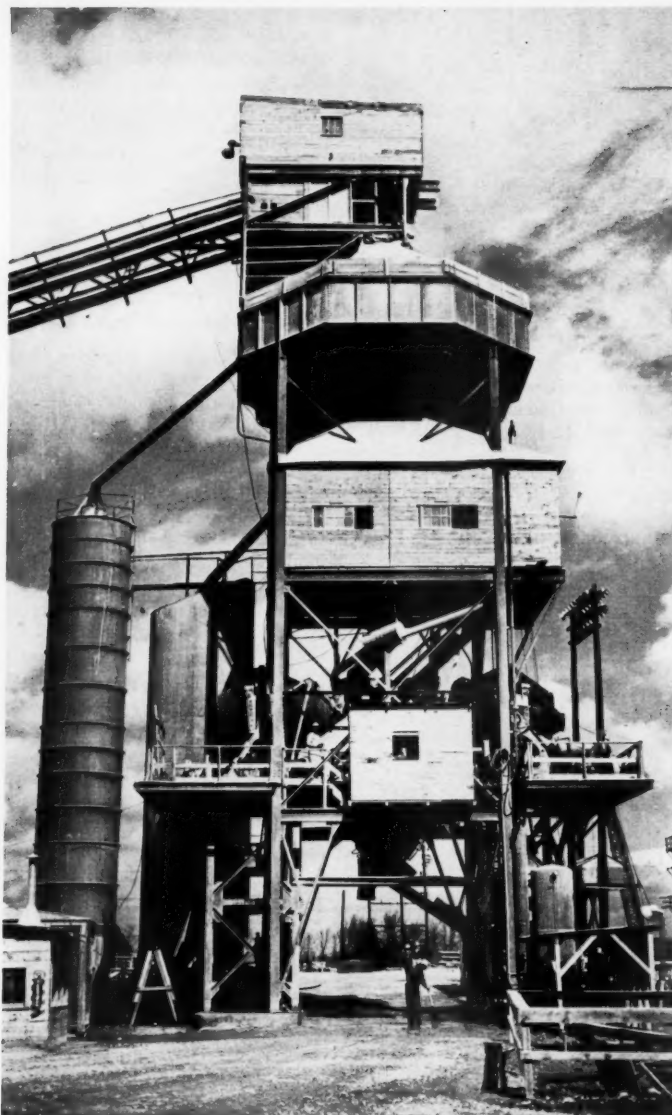
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age of other drifts with powerful rotary equipment.
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This is one of 6 concrete batch and mix plants equipped to turn out 150 yards per hour. Over 1 1/4 million yards of concrete are required on the project.



Big Caterpillar D8 clears trees and stumps to prepare for heavy earth-moving.

Savannah River Project

By WILLIAM H. QUIRK
Editor

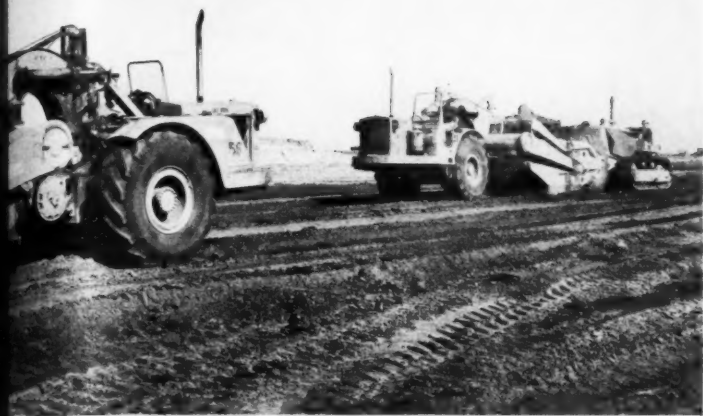
• THE billion-dollar Savannah River plant of the Atomic Energy Commission is rapidly being pushed to completion. While no atomic weapons as such are to be made at the huge South Carolina facility, the plant will turn out material that can be used elsewhere in the assembly of atomic or hydrogen bombs. Preliminary

construction at the site began early in 1951. E. I. du Pont de Nemours & Co., who built the atomic furnaces (reactors) at Hanford, Wash., during World War II for the production of plutonium, was awarded the contract for the new facility.

Located 15 miles south of Aiken, S. C., and 20 miles southeast of Augusta, Ga., the plant spreads out over 315 square miles, with a 31-mile frontage along the left bank of the Savannah River. Of irregular

With the water table only 5 feet below the surface, wellpoint systems had to be used on most pipe-laying operations.





Tractor-scrappers, boosted by D8 pushers, grab 18-yard payloads for 2,500-foot haul.



Keeping a careful eye on his grade stake, this Cat grader operator does final shaping.

pattern, the site has extreme dimensions of 22½ miles north to south, and 22 miles east to west. When acquired by the Government, about one-third of the area was open land used chiefly for farming, while the other two-thirds was woods. The region was sparsely settled, and only a few villages had to make way for the big project. Ellenton, with a population of 600, was the largest of the communities involved, and many of its residents moved to a new location outside the plant area.

A few brief statistics of the construction requirements point up the magnitude of the work:

Permanent buildings	267
Permanent railroads	66 miles
Permanent new roads	121 miles
Transmission lines	95 miles
Underground water lines	85 miles
Wells for drinking water	60 each
Excavation	34,000,000 cu. yds.
Reinforcing steel	117,000 tons
Concrete	1,250,000 cu. yds.
Structural steel	25,000 tons
Lumber	80,000 MBF

Peak employment during construction hit the 39,000 mark, and the operating force at the plant will be around 7,200.

Well Spread Out

Savannah River Plant is divided into several separate manufacturing areas, each of which is enclosed by stockade-type wire fence. Thus the 267 individual buildings are generally grouped in clusters that are miles apart. During the early phases of construction the site as a whole was not closed off, only the various manufacturing areas being restricted. Last December, however, as the big plant began to shape up, the entire project was closed off and only carefully screened workers were admitted. Such things as dimensions, sizes, and design of buildings are not available, and even general information on the construction details was limited. For the most part, the construction, together with the equipment and materials used, was conventional. Only the size and type of project were unusual.

Roads and railroads had to be built all over the site to service the individual areas. In addition to the 121 miles of permanent new roads, 88 miles of temporary roads were laid out. A temporary network of 32 miles of track was also put down as well as the 66 permanent miles of railroad.

From the Savannah River, water for operation of the plant is carried

(Continued on next page)

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BASED on user records, heavy-duty trucks equipped with Allison TORQMATIC CONVERTERS and TRANSMISSIONS last longer and cost less to operate than trucks with mechanical drives.

Records show that Allison TORQMATIC DRIVES boost truck availability, enabling operators to improve their schedules and, thus, they can do more business.

Trucks — and other heavy equipment — with Allison TORQMATIC DRIVES use the flexibility of the converter to start heavy loads and make shock-free gear shifts at full power. The Allison TORQMATIC DRIVES automatically balance engine power with the load requirement. This automatic operation makes the driver's job easier and reduces wear on the whole unit—thus cutting maintenance cost.

You are interested! Attach this advertisement to your letterhead and send it to Allison. You will receive detailed evidence on what these Allison TORQMATIC DRIVES will do for you.

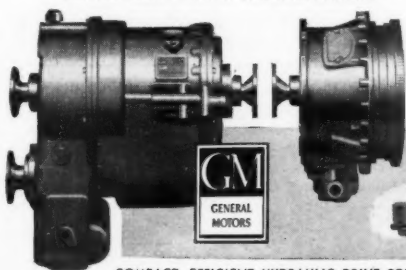
And the next time you're ordering heavy-duty equipment, you'll ask your dealer or manufacturer for units with Allison TORQMATIC DRIVES.

ALLISON Division of GENERAL MOTORS
Box 894CC, Indianapolis 6, Indiana

RATE OF COMPONENT OVERHAULS			
MECHANICAL POWER TRAIN			
ENGINE	CLUTCH	TRANSMISSION	DIFFERENTIAL
2.4	3.18	76	
CONVERTER POWER TRAIN			
48	46	39	

Rate of clutch, transmission and differential overhauls per engine overhaul for trucks equipped with mechanical drive and Allison TORQMATIC DRIVES. It shows that trucks with Allison TORQMATIC DRIVES have longer engine life, longer transmission life, and longer differential life.

MATCHED UNITS BUILT BY ONE MANUFACTURER



Allison TORQMATIC DRIVES



COMPACT, EFFICIENT HYDRAULIC DRIVE FOR TRUCKS * CRANES * TRACTORS * SHOVELS * DRILLING RIGS

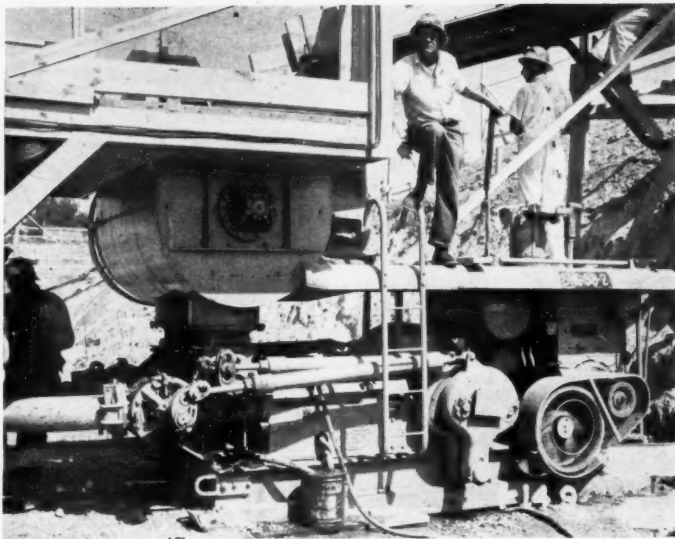
Savannah River Job Pushed to Completion

(Continued from preceding page)

in Lock Joint concrete pipe up to 84 inches in diameter. Domestic water is pumped from 60 different wells that go down over 500 feet. Water is plentiful, and with the water table averaging only 5 feet below the surface, wellpoint installations were necessary for both trenching and foundation work. Complete, Griffin, and Stang wellpoint systems were used. Many of the massive structures extend deep into the ground.

Work Allocation

Several major architect-engineer companies and construction subcontractors are assisting Du Pont, the prime contractor, who is doing the work for a dollar fee plus costs. All the buildings are being put up



A Rex Pumpcrete machine pipes concrete to one of the many odd-looking structures.

by Du Pont. The AEC buys the necessary construction equipment and retains ownership.

Among the subcontractors, Suber & Co., of Whitmire, S. C., did the grading, surfacing, and drainage for the network of roads and parking areas. These roads have a sand-clay base course on which is laid an inverted course of penetration macadam topped with a layer of hot plant-mix.

William A. Smith Construction Co., of Houston, Tex., handled the railroad work, while the Green Construction Co., of Oaktown, Ind., had a Du Pont subcontract for clearing, grading, and excavation of designated areas in preparation for the construction of certain buildings. The R. B. Potashnick Co., of Cape Girardeau, Mo., participated with the Green Co., on its contract. All concrete for the project was supplied by the Kolinski Concrete Co., of Milwaukee, Wis. Subcontracts were awarded on a low-bid basis, with the different construction companies supplying the equipment.

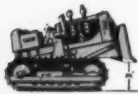
Large Equipment Fleet

Green Construction Co. assembled an impressive fleet of equipment to handle its contracts on railroad, pipeline, and grading work. Trenches were dug with 9 draglines up to 2½ yards in size. For the long-haul dirt-moving there were 16 Model C Tournapulls with 11-yard Carryalls; 4 Model A Tournapulls pulling 26-yard Carryalls; and 5 Caterpillar DW21 tractors with No. 20 scrapers. On the shorter hauls Green used 7 scrapers averaging 15 yards—4 Le-Tourneaus, 2 Gar Woods, and one Caterpillar.

Tractors for dozing, push-loading, and scraper-hauling included 17 D8's, 2 D7's, 1 D6, and 7 International TD-24's. Contact with the widely scattered equipment spread was maintained through General Electric 2-way radio. The contractor



More Powerful, More Rugged, but Still Highway Width!



Higher, Faster Lift—full 39½ inches above ground. Unusually good center of gravity affords excellent leverage and maximum traction with blade in any position.



Deeper, Faster Bite—full 15½ inch drop below ground. Positive down pressure, elimination of "bounce", and steeper approach angle puts—and keeps—blade down deep.

Baker's revolutionary, no pushbeam, highway width 9X dozer proved that *it could be done!* Now... Baker presents a *bigger, more powerful* edition—the Baker 15X—combining the famous Baker "roll action" 96 inch-wide blade with the 109 drawbar hp of A-C's HD-15.

The successful result of painstaking design and exhaustive testing, the big-capacity 15X utilizes Baker's specially engineered hydraulic lifting mechanism to direct every ounce of horsepower to where it counts most—at the dozer blade!

Now!... ask your Baker, Allis-Chalmers dealer for complete information about this completely new Baker 15X.

THE BAKER MANUFACTURING COMPANY, SPRINGFIELD, ILLINOIS



Check These Features!

- Legal Highway Portability—only 96" wide • Big Yardage Mold-board • More Horsepower at the Blade • Sure Footed—greater track oscillation • Working Center of Gravity • "Operator-Ease" Control • Design for Easy Servicing • Lighter—Less Cost.

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Hayward makes all three—clamshell, electric motor, orange peel. A Hayward recommendation is unbiased.



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Hayward Buckets

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For further information and literature on products described in this issue, turn to page 18 for the Red Request Card. Our Reader Service Department will be glad to help you.

Contractors and Engineers

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CONTRACTORS AND ENGINEERS

set up a 100-foot antenna tower at his field office, and installed units in the fuel and maintenance trucks and in the pickup trucks of the various superintendents.

Potashnick, who had done some earlier work in the area on an access road to the plant (see C. & E., July, 1951, pg. 5), had over 30 units working on general grading. Included in this fleet were 4 Caterpillar DW21 tractors with No. 20 scrapers which were push-loaded by D8's. Each unit carried 18 yards of payload on a 2,500-foot haul. The four together averaged 6,000 yards in a 9-hour day. Haul roads were maintained with 4 Cat No. 12 motor graders. No

rock was encountered on the site, so drilling equipment was not required.

Concrete Work

For the 1,250,000 yards of concrete required, the sand and stone aggregate was obtained locally from within about a 25-mile radius. Bulk cement and reinforcing steel came from several sources. Kolinski set up six concrete plants to supply the needs of the job. Of the six, both batching and mixing is done at five, while only batching is handled at the sixth location. Plants are equipped to turn out 150 yards per hour. Both Butler and Johnson plants are used, while the pair of 2-

yard mixers placed on a platform beneath the bins is either Koehring or Smith.

The usual procedure in concreting is to mix the batches for 1½ minutes, then discharge the material into transit-mix trucks which continue the mixing as they deliver the concrete to the forms. A fleet of 70 5½-yard Smith transit mixers on 6-wheel Autocars delivered the concrete. The plants were situated so that the maximum haul rarely ran over 8 miles. Water for the mix came from wells, and the cement was a combination of 75 per cent portland and 25 per cent slag cement. A strength of 2,500 psi was required.

For some of the larger pours on the huge odd-looking concrete and steel structures, the mixing plants were set up to deliver concrete directly to the forms by means of Rex Pumpcrete machines. The transit-mix trucks were eliminated, of course, on this short-distance placing.

Made to Order

Heavily braced forms were fabricated in a central shop area and delivered to the job location on trailer trucks. Panels were built in lengths up to 20 feet. This central shops area included a pipe-fabricating plant and contained the great stockpiles of ma-

(Concluded on next page)



Here's a Big Advance in Bulldozing Performance

This bulldozing team introduces new dirt-moving ability; a new, narrower-width blade for transporting by highway; new ease of servicing and operation — all at a new low cost.

Here are some specific characteristics that make it such a productive combination for many dozing jobs:

A great tractor. This popular Allis-Chalmers HD-9 Tractor has power, weight and balance that put it in a class by itself.

A revolutionary team. Here is a tractor-dozer combination, designed as a unit, which compares in performance with conventional "dozers" weighing from five to six thousand pounds more.

No push-beams. A completely new idea in bulldozer engineering, the Baker 9X blade is mounted directly to the HD-9 main frame. Tractor main frame and dozer are raised and lowered as a single unit.

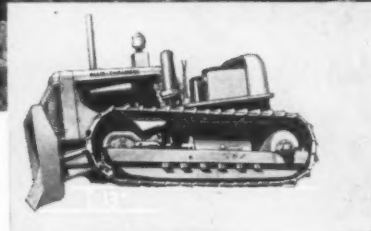
Lighter weight — better stability. Al-

most 1,150 lb. lighter than standard dozer. Costs less to buy. And with lighter blade mounted 15 inches closer, tractor center of gravity is not upset. No excess wear on front truck wheels and support rollers.

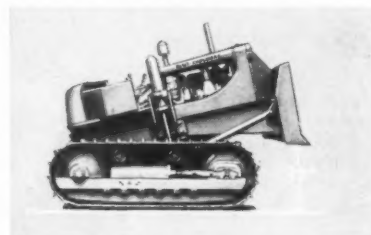
Big dirt mover. Because of extra clearance, greatly increased track oscillation and better balance, this team is a phenomenal performer in mud and tough going. And with blade fully six inches higher, capacity is kept on par with conventional blade.

Simplified servicing. 1,000-hour lubrication of truck wheels, idlers and support rollers. Dozer mounting does not interfere with engine accessibility. No removal of major tractor assemblies.

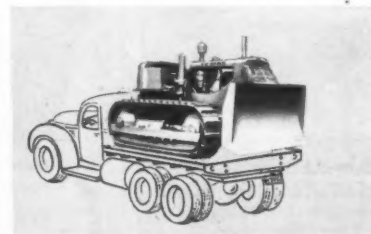
Easy to operate. Just by pulling a single lever, operator can shift from any of the six forward speeds to any of the three high-speed reverses. This, plus narrow, frame-mounted blade, makes the HD-9 particularly fast and maneuverable.



BITES DOWN HARD. Full 13-in. drop below ground, positive down pressure plus steep angle of penetration mean fast digging.



HIGH LIFT. Full 37 in. above ground. Excellent for pushing over trees and stumps and clearing brush.



EASIER HIGHWAY TRANSPORT. Blade is only 8 ft. wide — no transport permit needed.



THE FINEST
LINE ON EARTH

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

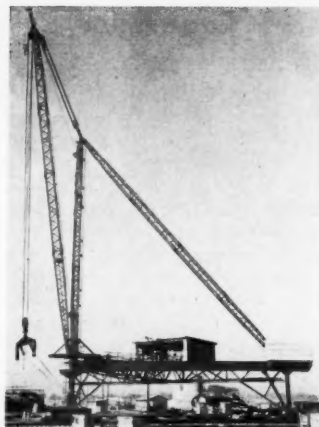
Savannah River Job Pushed to Completion

(Continued from preceding page)

terial going into the construction.

Occasionally a special piece of equipment was made up, such as a tall stiffleg traveling derrick used in the erection of pipe towers for a structure that resembles a huge petroleum refinery. This derrick had a 150-foot boom, a 100-foot mast, and a 133-foot stiffleg. Its capacity was 200 tons at a 40-foot radius. The pipe towers were delivered in one piece, carried on three railroad flat-cars, and then picked up and set in place.

Power for the job's construction needs is supplied by the South Carolina Power Co., but power units will eventually be constructed on the site for project operations. Clark Hill Dam, 20 miles up the river, will soon



Stiff-legged traveler derrick developed for special erection work.

be impounding enough water to produce 250,000 kw of electricity. Power from this U. S. Corps of Engineers structure is not contemplated for use at this time by the AEC.

Curtis A. Nelson is Manager for the Savannah River Operations, Office of the Atomic Energy Commission, supervising the work of the contractor. For Du Pont, Robert K. Mason is Field Project Manager for Construction.

Tractor Equipment Story

A story on the uses of the Hyster line of equipment for Caterpillar tractors is told in comic-book form. A contractor and a salesman visit job sites, most of them in rough terrain, where the equipment is at work.

The theme of the story is the versatility of the tractor-mounted equipment.

A Hystaway power shovel mounted on a bulldozer-equipped tractor trims an earth bank but can switch to dozing without removing the shovel from the tractor; with a backhoe attachment the unit digs close to obstructions and after the excavation it does its own backfilling; a towing winch pulls a scraper that is cleaning the muck out of a log-hole; other

winches are doing land clearing and erecting transmission lines through mountains. And so on through a variety of operations, the salesman explaining each.

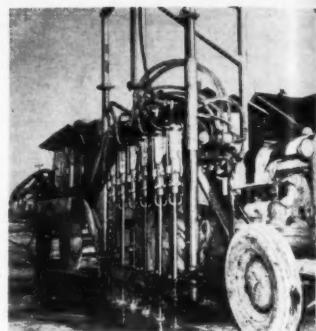
To obtain this literature write to Hyster Co., 2903-05 N. E. Clackamas, Portland 8, Oregon, or use the Request Card at page 18. Circle No. 493.

New Drilling Setup Cuts Time and Cost

The use of a new and unique arrangement of drilling equipment has simplified the removal of strips from concrete pavements to reach underlying utility lines. Developed by R. L. Coolsaet Construction Co., Dearborn, Mich., the arrangement consists of six drills (1 foot apart), mounted on a small wheel-type tractor to which a portable air compressor is hitched. The equipment moves down the pavement as one unit and, according to the company, drills the necessary holes in half the time required by other methods. Holes 6 inches apart are drilled by advancing the equipment 6 inches on one move and 5½ feet on the next. The job is completed by a hydraulic hammer and a backhoe which follow the drilling equipment.

On a 17-mile job involving a 30-inch high-pressure gas line the company reported increased efficiency and further reductions in drilling time through the use of an Ingersoll-Rand rotary compressor powered by a General Motors 2-cycle diesel engine. Although the output of this compressor is a full 60 cubic feet per minute, it took up little space in the street and was easily maneuvered due to its compactness and comparatively low weight. The time required to drill six holes (through 11-inch concrete and asphalt pavement) was only 1½ minutes.

Besides getting the job done faster, the company also reports substantial savings in labor costs. Only one man is required to operate the equipment. Also, because holes are consistently drilled 6 inches apart, ragged breaks



A closeup of the Coolsaet Co.'s multiple drills at work. They are operated by a GM-diesel-powered Ingersoll-Rand compressor which is hitched to the tractor.

in the pavement, which often cause damage to curbing, are largely eliminated.

The Coolsaet Co. is a leading mid-western contractor engaged in laying and servicing pipe lines.



**Lasts Longer Under
Stresses From Knots & Kinks**



Tuffy Braided Construction SLINGS

Knot it! Kink it—if you can! See how easily the patented braided construction of Tuffy Slings straightens out without damage. Only Tuffy gives you this extra flexibility and long-life strength—because *only Tuffy* has this 9 part machine-braided wire fabric construction that fights off knots and kinks, yet stands up longer when such stresses of distortion happen. Mail coupon below for your FREE 3-ft. sample of Tuffy Sling fabric and test it yourself!



MAIL COUPON TODAY
UNION WIRE ROPE CORP.

Specialists in Wire Rope and Braided Wire Fabric
2260 Manchester Ave., Kansas City 3, Mo.
☐ Send FREE Tuffy Sling Handbook and Rigger's Manual.

☐ Have my Union Wire Rope Fieldman bring me a FREE 3' sample Tuffy Sling.

Firm Name _____

Address _____

City _____ Zone _____ State _____

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RESISTANCE TO IMPACT AND ABRASION . . .

USE

MANGANAL

U.S. Patents 1,876,738 • 1,947,167 • 2,021,945

11%-13¼% MANGANESE-NICKEL STEEL

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Send for catalog and price list

FREE

Literature on latest methods for speedy and economical repair of worn equipment.

NEAREST DISTRIBUTOR UPON REQUEST

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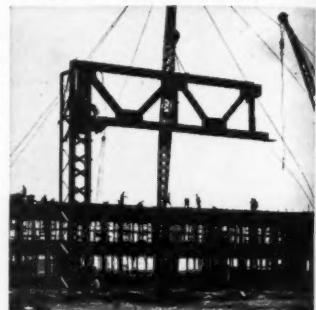
SOLE PRODUCERS 92 N. J. RAILROAD AVE. NEWARK, N. J.

Manganal—the toughest metal known • not harmed by heat—outlasts new hammers.

- Workhardens to 550 Brinell—tensile strength to 150,000 p.s.i.
- For greatest strength attach with Manganal Bare or Special Tite-Kote Electrodes.



Fight off Kinking!



**"Couldn't Kink Them
Even When We Tried"**

**Says Owner of an Eastern
Construction Company**
(Name on Request)

This Pennsylvania construction company owner also proved to himself that Tuffy Slings are extra flexible, extra strong. Tuffy's patented 9 part machine-braided wire fabric construction gives you a fabric that can be repeatedly bent around abrupt corners. And even when one of the strands is broken or cut, there's no stranding! Give your workmen an easy-to-handle tool that eases and speeds the handling of loads . . . can help you save up to 40% on sling costs. Get Tuffy Slings!



MAIL COUPON TODAY
UNION WIRE ROPE CORP.

Specialists in Wire Rope and Braided Wire Fabric
2260 Manchester Ave., Kansas City 3, Mo.
Please send my FREE copy of the Tuffy Sling Handbook and Rigger's Manual.

Firm Name _____

Address _____

City _____ Zone _____ State _____

Continuous-Mix Plant Gets New Control Unit

An improved volumetric-type bituminous mixing plant featuring new mixing and control units is announced by the Iowa Mfg. Co., Cedar Rapids, Iowa. The Cedarapids continuous-mix Master plant is said to produce both accurate and high-capacity mixtures.

The mixing unit is offered with a choice of single-shaft or twin-shaft pugmills. The 36-inch x 12-foot single-shaft pugmill mixes large volumes of bitumen and aggregate up to 200 tons per hour when conditions permit. Output of the twin-shaft pugmill is rated at approximately 200 tons per hour.

Other features of the mixing plant stressed by the manufacturer are accurate controls to maintain specified quality of the material, and a displacement pump with calibrated gage and hand-wheel control at the operator's platform. A covered 48-inch calibrated apron feeder on the gradation-control unit is synchronized with the bitumen pump to give correct proportions of bitumen and aggregate.

The checking equipment includes flop-type partitioned feeder-discharge chute, sample containers, and platform scales for checking conformance to specifications. Flow feelers over the feeder stop the feeder, elevator, and pump if any size aggregate or mineral filler is exhausted. Bin-level indication lights show the operator any nearly empty bin compartment. Lights for cut-out switches on operator's panel immediately indicate feed that fails.

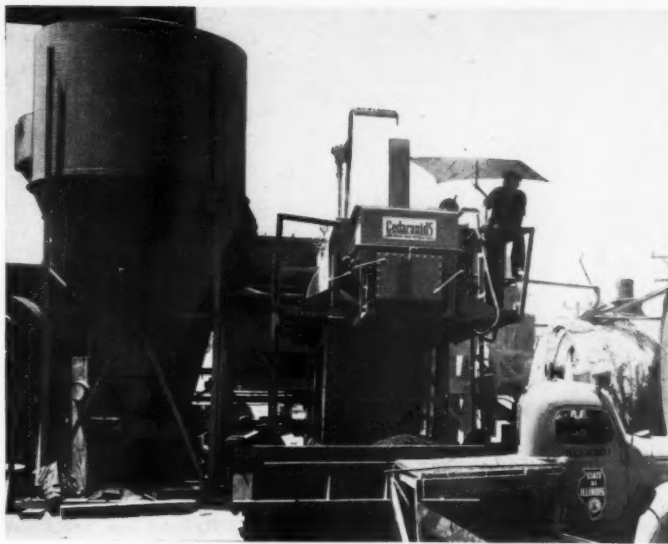
A selector switch provides for automatic or manual control of the plants. A compact remote-control weatherproof station panel is also available with sufficient cable to operate from either side of the mixing-unit platform or from the ground. The station has electric clutch control, auto-manual selector switch and various indicating lights. The discharge gate is power-cylinder operated, either steam or pneumatic.

Jacketed components include mixer, piping, pump, and discharge box for steam or hot-oil heating. The plant is fully enclosed to minimize dust and heat loss. Mixing-paddle faces are reversible. They adjust out to compensate for wear and are angularly adjustable to control thoroughness of mixing and speed for mix through the mill.

The horizontal vibrating screen on the gradation-control unit sizes material accurately. An overflow conveyor carries excess material back to the elevator, thus preventing waste or rehandling of material. Hydraulic-jack-type telescoping legs are the foundation of the gradation-control unit and take weight off the tires when set up for operation.

The gradation-control unit can be replaced, if desired, by Model TEF elevator and feeder unit for production of single-aggregate hot-mixes. A bulkhead-type aggregate feeder is available for the Model MM mixing unit to produce single-aggregate cold-mix. Either Cedarapids 72-inch x 24-foot or 88-inch x 28-foot dryers can operate with the Master plant. The complete plant is portable for moving from job to job.

For further information write to



The improved Cedarapids continuous-mix Master plant

the company, or use the Request Card that is bound in at page 18. Circle No. 459.

Handbook on Carburetors

A 46-page carburetor handbook entitled "Know Your Carburetor" has been issued by Pennsylvania Refining Co., 2686 Lisbon Road, Cleveland 4, Ohio. It describes in nontechnical language the basic theory of the carburetor, its various parts, and the common carburetor troubles usually encountered and how to correct them.

The pocket-size booklet is divided into ten sections. Each section contains easy-to-understand descriptions and detailed illustrations on the various carburetor parts and how they function.

This literature may be obtained from the company, or use the Request Card at page 18. Circle No. 546.

CONTRACTORS SAY:

Put a SHOVELoader on EVERY JOB!



for cleaning up bricks, concrete, and other debris.

for digging and loading sand, dirt, gravel, blacktop, cinders, and coal.

for charging hoppers and batchers, for lifting barrels, pipe, structural members, brick, and cement.

for landscaping, leveling, grading, backfilling, dozing.

for loading and moving lumber, masonry blocks, crates, steel, and logs.

for snow plowing, sweeping, scooping, and ice scraping.

On scores of jobs too big for manual labor but too small for heavy equipment, contractors find the versatile Lull Shovel loader really pays off. Keeps the big equipment on the big jobs... gets your small jobs done faster and easier.

There's a Lull Shovel loader to fit your job requirements. (See chart below.)

MODEL	CU. YD. CAPACITY	LIFTING CAPACITY	LIFTING HEIGHT	DOWNCROWD
3B	3/4	1800 lbs.	9'	16"
4A	1 1/2	2500 lbs.	9'11"	23"
4B	3/4	4000 lbs.	9'11"	24"
4C	1	6000 lbs.	11'	26"

Quickly interchangeable attachments include material buckets, coal and snow buckets, material handling forks and cranes, bulldozer blades and sweepers.

LULL SHOVELLOADERS mount exclusively on the dependable Case, Minneapolis-Moline, Oliver and Sheppard industrial wheel tractors. Contact these distributors for complete information or mail the coupon today.

LULL

Manufacturing Company
370 W. 90th St., Minneapolis, Minnesota.

Lull Manufacturing Company
370 W. 90th St., Minneapolis, Minnesota.

Mail me your 10 page catalog which shows Shovel loader uses, attachments, and complete specifications.

Name _____

Firm _____

Address _____

City _____ Zone _____ State _____

Bay City President Dies

W. Selwyn Ramsay, founder and President of Bay City Shovels, Inc., Bay City, Mich., died on December 20, 1952, at the age of 78.

A resident of Bay City since 1890.

Mr. Ramsay helped organize the Bay City Dredge Works in 1913, becoming President a year later. The firm, which became Bay City Shovels, Inc., in 1929, pioneered in the use of the internal combustion engine for excavating equipment.

4-Cycle Air-Cooled



KOHLER ENGINES

Power for garden tractors, mowers, pumps, sprayers, snow removal equipment, elevators and hoists, portable saws, concrete mixers, compressors, grinders, industrial and lift trucks, and a wide range of tools and equipment for industry, construction, farm and home.

Engineered and built to the quality standards that have won acceptance for Kohler Electric Plants the world over.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

THE *Best* RULE TO FOLLOW WHEN YOU BUY A MIXER...



● You know just what the performance of a Mixer will be when it's AGC RATED!

For to wear the AGC plate, portable concrete Mixers and Pavers must meet rigid specifications as to sizes and mixing capacity.

Be sure the Mixer you buy is AGC RATED!



Mixer Manufacturers Bureau

Affiliated with the Associated General Contractors of America, Inc.

CHAIN BELT COMPANY
Milwaukee, Wisconsin

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa

THE KNICKERBOCKER CO.
Jackson, Michigan

KOEHRING COMPANY
Milwaukee, Wisconsin

THE FOOTE CO., INC.
Nunda, N. Y.

THE JAEGER MACHINE CO.
Columbus, Ohio

KWIK-MIX COMPANY
Port Washington, Wisconsin

THE T. L. SMITH COMPANY
Milwaukee, Wisconsin

WORTHINGTON CORPORATION
Construction Equipment Division
Plainfield, New Jersey

WASHO Road Test

Discontinued for Winter

Instruments buried in the pavement of the Western Association of State Highway Officials road test in Idaho (see C. & E., Sept., 1952, pg. 10), showed freezing in the subgrade last November, so the test traffic was discontinued until next spring. Several pavement sections (6 to 22 inches thick) had been tested by 17,000 applications of heavy-axle loads and, as had been anticipated, some of the 6-inch-thick sections showed distress. Except for three small isolated areas where small depressions of the surface were noted, no effect of the traffic to date on any of the thicker test sections is apparent. All failed areas have been repaired in accordance with normal maintenance practices.

The WASHO Road Test, under the direction of the Highway Research Board, is one of a series of large-scale research projects designed to answer some of the pressing questions concerning the effect of heavy trucks on different types and designs of pavement.

Light Truck Crane

The addition of a new 6-ton truck crane to its line is announced by the Thew Shovel Co., 28th St. and Fulton Road, Lorain, Ohio. The TL-10 crane can be used as a 3/4-yard dragline or clamshell. It mounts on a suitable truck, on piers, barges, bins, trailers, and flatcars.

The crane is a 2-drum gasoline-powered machine with a 25-foot 2-piece boom. Center sections can be had to extend the boom to 45 feet. Tagline for clamshell service, fairlead for dragline service, and a power boom-lowering device and other extras are available.

Features include unit assembly of "packaged" components, oil-enclosed gears, antifriction bearings, interchangeable clutch shoes, and safety glass windows. The unit has drop-forged turntable rollers, machine-cut teeth on ring gear, ma-



chined flanges for turntable rollers, and 3-inch wide shoe-type clutches. No laggings are required on the two hoist drums that hold 200 feet of 1/2-inch cable each. The boom hoist drum has a take-up reel for reeling by power and storing up to 100 feet of excess hoist cable, eliminating necessity for floating harness.

For further information write to the company, or use the Request Card at page 18. Circle No. 446.

Story of Road Progress

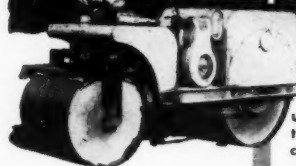
A half century of development and growth in the field of power transmission is described by the Fuller Mfg. Co., Kalamazoo, Mich., in the golden anniversary issue of its house magazine.

This issue of Transmission Topics depicts achievements of years gone by which many will read with nostalgia. Filled with photographs out of old albums, of early and modern motor trucks and mobile machines, and ancient and futuristic highways, the stories tell of the phenomenal progress which has been gained during the past 50 years in the field of transportation and materials handling.

The company's part in providing better power transmission to the many on-highway and off-highway transport units is told in interesting picture-stories.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 514.

CUT ROLLING COSTS with Essick high compaction rollers



You can cut dollars off every rolling operation—whether paving a walk or a highway—when you use an Essick roller! They put the weight where it really counts, on the compaction roll!

Compare these compaction ratios with any other

Model	Tons	Compaction, lbs. per lineal inch
200	1 1/2 to 2	60 to 110
300	2 to 3	110 to 148
400	3 to 4	105 to 160
500	3 1/2 to 5	156 to 200

SEE YOUR NEARBY ESSICK DEALER OR WRITE DIRECT

Sales and Service Coast to Coast and in Foreign Countries

ESSICK

Essick Manufacturing Company

1950 Santa Fe Ave., Los Angeles 21

CHECK THESE EXTRA ESSICK ADVANTAGES!

• **Adjustable roller weight**—water ballast system affords variable compaction to fit particular job.

• **Profit-saving operation**—immediate direction change—no pause at end of run to mar blacktop and require expensive hand-iron work.

• **Speedy compaction**—Essick Road Rollers effectively work a larger area in a shorter time than any other rollers in their size range!

Line of Truck Bodies

A new truck body for building contractors, in 12, 14, and 16-foot-long sizes, has been developed by DeKalb Commercial Body Corp., DeKalb, Ill. The bodies are 89½ inches wide and have 42-inch stationary steel sides and a 24-inch steel tail gate.

The flooring is of 2-inch select center-matched pine, tongued and grooved. Diamond-tread safety plate laid over the standard flooring is optional. The bolsters are constructed of high-tensile steel channels. The longitudinal sills are of select hardwood. Upright posts and header rails are 11 and 18-gage high-tensile steel, 1¼ inches square. Bulkhead and side panels are of 16-gage steel sheets, electrically welded to the frame.

The 12-foot unit weighs 1,450 pounds with open end (no tail gate) and 1,525 pounds complete with 24-inch steel tail gate.

Further information may be secured from the company. Or use the Request Card that is bound in at page 18. Circle No. 545.

Solids-Handling Pump

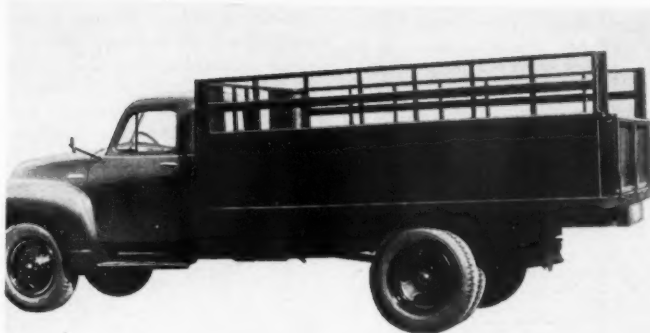
A new line of solids and acid-handling pumps manufactured by The Galigher Co., 545 W. Eighth South St., Salt Lake City 4, Utah, has been announced. The Vacseal pumps are constructed to prevent fluids or entrained solids from being forced into the gland. The impeller is a disk with pumping vanes on one side and smaller auxiliary vanes of a greater diameter on the reverse side next to the gland. These auxiliary vanes produce a vacuum on the shaft seal and prevent solids from cutting the shaft or packing. The pumps require no sealing water to protect the gland and packing, according to the manufacturer.

These pumps are suitable for handling sand, gravel, and cement. Suction lifts of 10 to 12 feet are said to be possible.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 544.

Folder on New Trencher

An 8-page bulletin describing its Model 95 trencher has been issued by the Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio. It includes details of design, materials, and construction, and information on component parts—from the 320-cubic-inch engine to the rooster



One of DeKalb Commercial Body Corp.'s new truck bodies.

tips on the buckets. A numbered outline photograph identifies each important part.

On-the-job photographs show the unit operating under various job conditions. Complete dimensions and specifications are given, includ-

ing tables of optional trench widths and digging-wheel and traction-speed combinations.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 543.

ARBA Technical Bulletins

The American Road Builders' Association has published five more handy technical bulletins, this time including: "Economical Construction of County Roads with Emulsified Asphalt"; "Traffic Tests of Soil-Cement Lanes"; "The Economic Value of Using Calcium Chloride in the Stabilization of Gravel Roads"; "Practical Utilization of Aerial Photography in Highway Location"; and "Design, Construction and Maintenance of Secondary Roads." These are in line with the organization's policy of assembling the best information available and presenting it in the most practical and usable manner. The pamphlets are obtainable from the ARBA, International Bldg., Washington 4, D. C. Members are entitled to one free copy of each bulletin and there is a nominal charge for nonmembers.



Why TRU-LAY Scraper Ropes Last Longer . . .

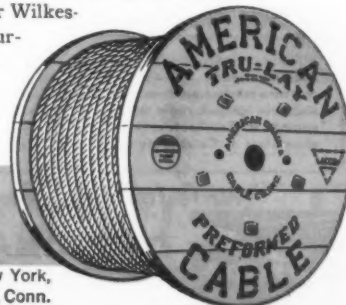
• Quality materials and expert manufacturing are factors in the longer life of TRU-LAY GREEN STRAND scraper ropes. But the most important thing is the grade and construction.

Sharp bends around small sheaves, abrasion from dust and dirt, shock loads—these are the things that sort the men from the boys when it comes to the life of the wire rope. If you want to hold down service costs, these are the factors to be considered when you are thinking about ordering new wire rope.

AMERICAN CABLE engineers have made unending checks of scraper ropes in service and know the best construction for the job.

They designed a rope with the exactly right combination of wire sizes and core—made from improved plow steel—and preformed. They put a green strand in it for quick identification.

So when you need scraper rope, or rope for any of your earthmoving equipment—specify, and get, TRU-LAY Preformed GREEN STRAND. It's the one sure way for you to get the best possible, longest lasting, most economical wire rope for each machine you operate. See your AMERICAN CABLE distributor today, or write our Wilkes-Barre office for further information.



ACCO



AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

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ROAD BUILDERS — IT'S SENSATIONAL!
DRAGS **PECKERWOOD** DRAGS

STEEL SPRING WIRE ROAD BROOMS
MADE IN ANY C-O-N-T-I-N-U-O-U-S
LENGTH UP TO 12 FEET
WIDTH 6 INCHES—IT'S DIFFERENT
ASSEMBLE YOUR OWN—IN ANY SHAPE
REQUIRED—IN MINUTES, NOT HOURS

NO FRAME REQUIRED

MADE WITH KILN DRIED 6" WIDE
HARDWOOD AND HEAVY SPRING STEEL
WIRES TRIPLE OUT EACH HOLE.
NOT STAPLE SET.

THIS IS IT! ORDER NOW

ILLUSTRATION OF
10-FOOT LENGTH
ONLY \$3.50

RUNNING FOOT F.O.B. K.C., MO.
NOTICE! Our 15" length Unit Drag 3" wide
with the two bolts that fits your frame,
still \$2.50 ea.

SINCE **VAN BRUSH MFG. CO.** 1928
327 SO. WEST BLVD., KANSAS CITY 8, MO.

FEBRUARY, 1953

Portable Earth Drill

A portable earth drill is announced by The Buda Co., Harvey,



Ill. The Model Y-1 drills holes from 6 to 36 inches in diameter and up to 12 feet in depth. It can be quickly set up to drill vertical or angle holes.

All adjustments are hydraulically controlled.

The drill is powered by a Buda gasoline engine. The transmission has four speeds forward and one reverse. The unit is built on a steel skid-type frame. The complete unit can be mounted on a 1½ to 2½-ton truck.

For further information write to the company or use the Request Card that is bound in at page 18. Circle No. 468.

Gas-Driven-Welder Catalog

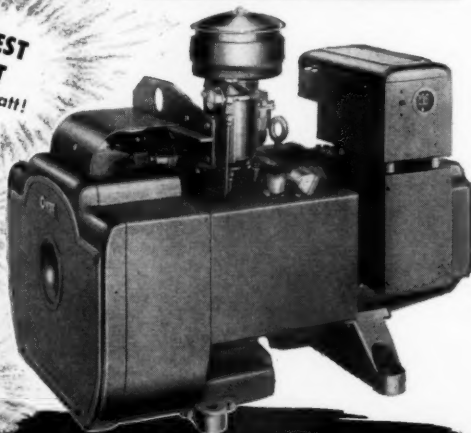
A new folder illustrating and describing the complete line of Hobart gasoline-engine-driven arc welders is put out by Hobart Bros. Co., Hobart Square, Troy 1, Ohio. Complete electrical and mechanical specifications are given for the arc welders and combination model of arc welder and power unit.

Take a good look at this New Powerhouse!

**LOWEST
COST**
per kilowatt!

**HIGHEST
OUTPUT**
per pound!

**MOST
COMPACT!**



The ONAN "CW" Electric Plant

5,000 or 10,000 WATTS

Designed to fit every application better... standby, portable, mobile and stationary. Whatever your need for electric power, the new Onan CW-5 and 10 give you top performance and value!

Here for the first time are 5 and 10KW electric plants powered by revolutionary, new air-cooled gasoline engines, designed and built by Onan exclusively for electric plant use!

Both engines are 1800 R.P.M. The 13HP Onan engine which powers the CW-5 and the 20HP Onan engine used for the CW-10 weigh much less than general-purpose engines, and are amazingly compact. Built to deliver dependable, trouble-free service in heavy-duty use. Two-cylinder, alternate-firing design assures smooth, vibration-free power. New, quiet, highly-efficient vacuum air cooling drives out all heated air through one side duct. The same duct carries exhaust gases, simplifying installation.

Impulse-coupled, high-tension magneto ignition for quick starting under all conditions. Both models in all standard voltages 60-cycle A.C., single or three phase.

Far Out Front in design and engineering

- Twin-cylinder, horizontally-opposed, air-cooled, alternate-firing engines
- Aluminum-alloy cylinder heads
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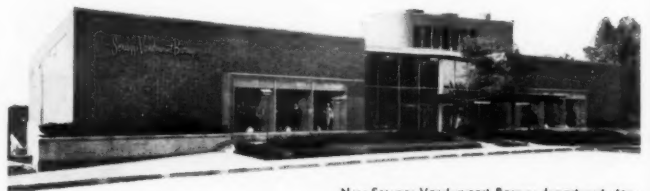
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The line includes a 250-amp model for pipeline work and two 300-amp welder-generators that give 1-kw and 3-kw auxiliary power. Three types of portable mountings are available: the shop-type 4-wheel

mounting, the yard-type steel-wheel trailer, and the 2-wheel road trailer.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 542.



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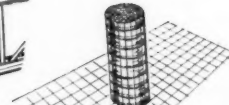


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CONTRACTORS AND ENGINEERS

Relocation Replaces Steep, Winding Road

Heavy Grading on Wet Ground Presents Haul-Road Problem On U. S. 6 Project in Connecticut

By ALBERT C. SMITH, Associate Editor

• REPLACING a winding stretch of 2-lane road in Connecticut with a straight wide highway is giving the rugged countryside a considerable facelifting. The 3½-mile relocation of U. S. 6 between Sandy Hook and Southbury is cutting sharp gouges into the hills overlooking Lake Zoar, but it will do much to aid travel to the northeast.

The new highway will begin about ½ mile south of Sandy Hook and run generally parallel to the existing Route 6. It will include stretches of both 2 and 4-lane pavement, with bridges and cloverleaf ramps at major intersections.

The \$1,000,000 contract for grading and paving was awarded by the Connecticut State Highway Department to D. V. Frione & Co., Inc., of New Haven, Conn. The project is being financed by both state and Federal funds.

A single 24-foot concrete pavement begins at Route 34 and extends 9,100 feet to a 1,300-foot transition to 4 lanes. The divided strip then runs 5,300 feet to a 900-foot transition back to 2 lanes. This stretches 1,900 feet to a temporary bituminous-macadam tie-up with Route 6.

Road Design

Typical Connecticut road-design features have been used on both single and double pavements. The single pavement consists of a 24-foot-wide reinforced slab 8 inches thick. Shoulders on each side are 10 feet wide and are made up of a 2-inch bituminous-concrete surface course on 6 inches of rolled gravel. In cuts, the shoulder also forms a gutter at the toe of the slope.

The 4-lane section has two 24-foot-wide lanes separated by an earth median strip of varying width. Two 2½-foot-wide plain concrete slabs run along the strip on each side acting as gutters. Small plain concrete curbs separate the pavement from the median strip.

In both the single and double pavement, the cross slope of the slab is ½ inch per foot. In fills the shoulder slopes ½ inch per foot and in cuts ¾ inch per foot. Embankment slopes vary from 1½ to 6 to 1. In rock cuts the side slopes are 1

to 2. Side slopes in earth cuts are 2 to 1.

Selected gravel subbase is required under all pavement, median strips, and shoulders, and carries out to the edge of the embankment. It is 6 inches deep in fills, 12 inches deep in earth cuts, and 24 in rock cuts.



Ingersoll-Rand wagon drills work on steep rocky slopes on the U. S. 6 job in Connecticut. In the foreground is some of the rock already blasted. C. & E. Photo

Wire-rope guardrail will be used where necessary.

The contractor moved in during July, 1952, and immediately began

clearing and grubbing. Two one-man McCulloch chain saws cut all trees and heavy brush. A TD-18 (Concluded on next page)

practical pointers... on choosing the right instruments for your job

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laying out and measuring horizontal and vertical angles, leveling, measuring differences in elevation, setting building lines and batter boards, lining up engine beds, plumbing walls and columns, use the sturdily built, moderately priced Berger Convertible Transit-Level. 12-inch erecting-internal focusing hard bronze telescope. Rack and pinion adjustment. 22 power coated optics. Steel spindle. Horizontal and vertical vernier readings to 5 min. Dust-protected axis bearings, leveling, tangent and clamp screws. Mahogany transit case.

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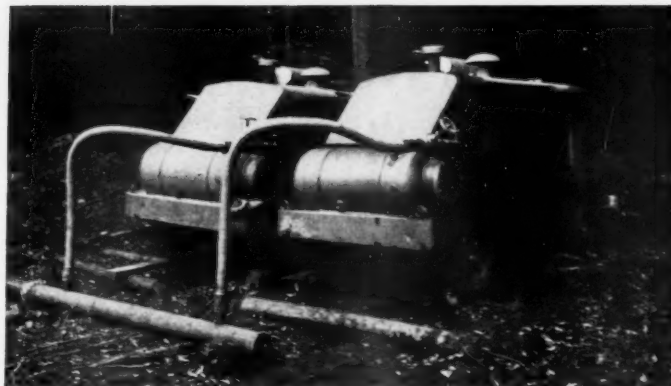
(Continued from preceding page)

bulldozer pushed up the material into piles for burning along the center line of the right-of-way. Four pumps were kept on hand at all times to control the fire.

Drilling

Less than 2 weeks after clearing operations started, enough hillside had been exposed to begin large-scale excavation. The contractor brought in 5 Ingersoll-Rand wagon drills and 2 new I-R Gyro-Flo 600 compressors. Two Ingersoll-Rand 315 compressors were used for specialized work.

Holes were drilled on 5-foot centers with both standard and carbide-tipped Timken drill bits. Holes went 20 feet into the hard schist using



A closeup of the twin 600-cfm I-R Gyro-Flo compressors sending air through a 6-inch steel pipe to the wagon drills. Victaulic couplings (there's one in the left foreground) connect the 20-foot pipe lengths. C. & E. Photo

8 to 20-foot lengths of drill steel.

Ordinarily, 160 holes were drilled for each blast. Regular caps with 20-foot wires were connected to the

40 per cent Du Pont dynamite. All homes in the area were warned and roads blocked. The firing operator used power from the grease truck

which usually kept at least 500 feet from the blast. Shots were made almost every night. Between $\frac{1}{2}$ and $\frac{3}{4}$ pound of dynamite was used per cubic yard of excavation.

Most of the drilling was done on steep hillsides. The wagons were anchored with wire rope to trees on top of the hill and pulled up and down by pneumatic winches.

The compressor setup allowed the drillers to work several hundred feet from the big 600's before moving everything up. Twenty-foot lengths of lightweight 6-inch steel pipe connected by Victaulic couplings carried the compressed air safely over rugged terrain to the drills. The Victaulic coupling provides a flexible joint which permits the pipe to conform to the natural ground.

Excavation

Excavation followed right behind the blasting. Two Northwest 80D shovels with $2\frac{1}{2}$ -yard buckets worked with 5 bottom-dump and 8 end-dump Euclids.

The average haul was 1,000 feet, but in many cases it was a rugged haul. The new road winds through a deep valley and runs generally parallel to a brook. The watery condition of the ground, plus the absence of any usable existing road, made haul roads a big problem. Special rock cuts had to be made in several cases to get the big Euclids over into the next fill.

Fill was laid in 1-foot layers. The Euclids provided the 95 per cent compaction. Total earth excavation was 310,000 cubic yards, and rock amounted to 111,000 cubic yards. Rock was excavated for the 4-lane width, even in areas where only 2 lanes were being built.

Drainage work included 10,000 feet of reinforced-concrete pipe and 2,000 feet of Armco metal pipe. Sizes range from 15 to 60 inches. Drainage work was done with one Northwest and one Marion $\frac{3}{4}$ -yard backhoe.

Other equipment on the job consisted of a P&H truck crane, 2 Caterpillar D8 dozers, 1 International TD-18 dozer, 1 Allis-Chalmers HD-19 dozer, and 1 Austin-Western grader.

Personnel

R. W. Butler, Superintendent for D. V. Friene & Co., Inc., used a total of 65 men on the job. Chief inspector for the Connecticut State Highway Department was E. J. Briggs, later succeeded by Earl Myers. The Department is headed by G. Albert Hill, Commissioner, and Warren Creamer, Chief Engineer.

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CONTRACTORS AND ENGINEERS



Abrasive Wheels Cut Stone, Metal, Plastic

An electric saw with three types of abrasive blades which are said to cut stone, metal, plastics, and synthetic hardboards, is announced by Porter Cable Machine Co., 1714 N. Salina St., Syracuse 8, N. Y. For quick identification, the manufacturer packages the new blades in three different colors to designate their respective uses.

The blades are reinforced and semi-flexible to reduce danger of breakage. The side of the blade can be used as a grinding wheel to de-burr, bevel, or polish. The blades come in 6, 7, and 8-inch diameters.

According to the manufacturer, the new blades may be used on any electric saw, but they cut most effectively when used on one of the company's Speedmatic or Guild saws.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 541.

Trains Advanced Welders

Last year, 562 advanced welders were trained in the full usage of joining processes at Eutectic Welding Institute classes in Flushing, N. Y., and on the west coast. In addition to extensive training on arc, gas, and induction-heating applications, they learned the newest joining procedures utilizing ChemoTec, a group of metallic-organic bonding agents which have been developed by Eutectic Welding Alloys Corp., Flushing, New York, N. Y., to bond metals to metals and nonmetals without heat or pressure.

This program trains only advanced welders by means of "conference-type" practical training "clinics". By immediately following a short lecture period with detailed practical demonstrations in which the students join, the welders actually use new labor and time-saving welding methods to solve problems they may have encountered in the field. The course, limited in number, takes a full week, with classes held every two weeks throughout the entire year. Following the course Eutectic maintains contact with each graduate through a printed monthly magazine which posts them on advanced welding techniques and newly developed welding materials.

Detailed subject outlines, schedules, and other data on the courses may be obtained by writing to Eutectic Welding Alloys Corp., Dept. P, 172nd St. at Northern Blvd., Flushing 58, New York, N. Y.

A Vibrating Screen

A new vibrating screen for sizing and processing rock and other bulk materials has been developed by Hewitt-Robins Inc., 666 Glenbrook Road, Stamford, Conn. Designed to handle heavier loads than previous models, the new screen is equipped with a heavier yoke and is mounted on coil springs instead of the leaf springs formerly used. The springs are encased in a neoprene-rubber accordion-type boot to keep out sand, stones, and other substances.

All units have 3-inch discharge lips. Both single and double-deck models are available. The single-deck model converts to two decks by the installation of skirtboards, screen cloth, a bucket frame, and discharge lip.

The screen, known as a Robins Vibrex, Model MS, gives two positive strokes with every revolution

of the counterweights. These strokes bounce the material being screened out of and above the screen cloth. At the same time, the particles develop a circular action, so that they rotate as they progress across the deck.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 451.

Hummel for Heil in Atlanta

H. C. Hummel will represent the Road Machinery Division of The Heil Co., Milwaukee, Wis., at the company's Atlanta, Ga., district office. Mr. Hummel has seen recent service as District Representative for the Atlanta office of Shield-Bantam Co.

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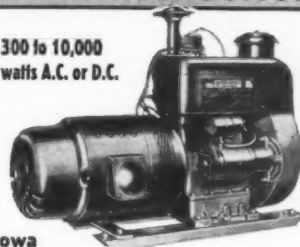
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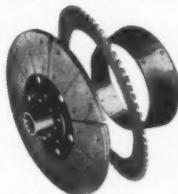
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Side-Shift Device For Grader Blades

A new hydraulic side-shift for motor-grader blades has been announced by the American-Coleman Co., 313½ S. 14th St., Omaha, Nebr. It shifts the blade to right or left for shoulder sloping and ditching jobs. Casting the blade load over embankments can be done more quickly, easily, and safely, the manufacturer points out. The 24-inch left or right-hand shift gives the blade an extreme reach of 56 inches outside the rear tires.

The 12-foot x 22-foot x ⅝-inch moldboard moves on two chrome-plated slide rails. Rollers with needle bearings prevent the slide rails from binding and give blade support in shifting. This support allows the blade to be shifted smoothly while the blade is working and the machine is moving. The blade can be



shifted when in any position.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 461.

Tractor Cover Sends Engine Heat to Driver

A cover that fits over crawler-tractors to funnel engine heat toward the operator is made by the Comfort Equipment Co., 2609 Walnut St., Kansas City, Mo. The cover also shelters the operator's legs and hands. Tractor controls are in a protected area.

The heaters are made of heavy weather-resistant canvas and have a framework of iron. Panels fold back to control the amount of heat that flows to the operator. Tension springs prevent sagging when the panels are folded back. The oil stick and starting mechanism are accessible through flaps.

For further information write to the company, or use the Request Card at page 18. Circle No. 439.

How Creosote Protects Wood

A booklet explaining how creosote preserves wood has been published by the Tar Products Division, Koppers Co., Koppers Bldg., Pittsburgh 19, Pa. A table lists fractional compounds of creosote and their preservative qualities.

The great number of compounds in creosote contribute more to its effectiveness and permanence than any given fractional distillates, the booklet points out. For this reason

creosote today is basically unchanged from the product that was used years ago. Illustrations show 20 to 50-year-old creosote-treated wood in good preservation.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 540.

Uses for Blast-Furnace Slag

A material containing the unwanted elements of ironmaking—blast-furnace slag—was once waste and a disposal problem. Today, according to American Iron and Steel Institute, of the estimated 39 million tons produced in 1951, about 29 million tons was processed and sold by 43 companies engaged in processing slag. Treated either by cooling in air or water, the primary processed

variety is used in concrete construction ranging from building columns to explosive-storage igloos. It is also used in bituminous construction of all types for highway and airport construction and for railroad ballast, and is the principal source of raw material in the manufacture of mineral wool for thermal and acoustical insulation and roofing granules.

Slag helps to protect the public health through its use as a filter medium in sewage-disposal plants and contributes to the public welfare through its use as a soil conditioner. More than 2.2 million tons of granulated slag was utilized as a raw material in the manufacture of cement. Small tonnages even serve as a solid base onto which young oysters attach themselves. Pearl cultivators, please note.

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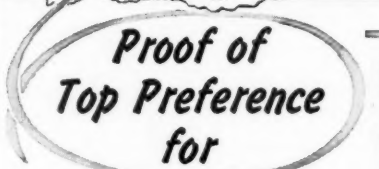
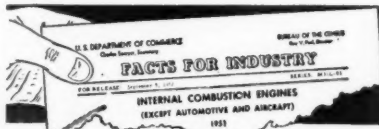
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58



WISCONSIN HEAVY-DUTY Air-Cooled ENGINES

Based on data contained in a "Facts for Industry" report released on Sept. 5, 1952 by the U. S. Bureau of the Census, an aggregate average of 50.61% of all carburetor type internal combustion engines produced during 1950-'51 within an 11 to 175 cu. in. displ. range (approx. 3 to 40 hp.) were WISCONSIN HEAVY-DUTY AIR-COOLED ENGINES (exclusive of aircraft, automotive, outboard marine and "captive" engines built by various manufacturers for use on their own equipment).

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Wisconsin general-purpose Air-Cooled Engines have been pre-judged and pre-selected by more power-wise purchasers than ALL other makes of engines combined, within a 3 to 40 hp. power range. Perhaps it's your turn to specify "Wisconsin". Descriptive literature and engineering data on request.



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Construction Machinery Co., Waterloo, Iowa

CONTRACTORS AND ENGINEERS

Floodproof Section In City Power Plant

Work on Kaw Power Station and Municipal Plant Includes
Building of Intake Structure, Sealing Weir

By L. H. HOUCK

• A FLOODPROOF first-level section, 15 feet high, is an unusual feature of the \$9,000,000 Kaw Power Station being built by Kansas City, Kans., and a forward step in maintaining power under adverse circumstances. Located on Kansas Ave., this new power plant rises amid evidences of the destructive power of the record-breaking flood water of 1951. Wreckers are still tearing down brick and stone buildings in the area which were ruined by the flood.

Even though new flood-control measures may forestall any repeat flood, the Kaw Power Station will withstand higher flood waters than any ever recorded in the history of the Kaw River area. The last flood taught an unforgettable lesson—power lines are veritable lifelines and in a highly industrial and manufacturing area, can be food and income lines as well.

Primarily, of course, the new plant is to supplement the power supply from the Quindaro Power Station (129,000-kw capacity) and to furnish adequate power for new industries interested in this mid-western location. It energizes the city's new slogan, "More Power for More Industries". The Board of Public Utilities of Kansas City, Kans., moved to keep open the door of industrial expansion when it started construction of Kaw Power Station early last spring. Contracts were let during the winter and early spring of 1952 on many parts of the job and first work was started in April, with completion scheduled early in 1954.

Plant Capacity

The new plant has an eventual ca-

capacity of 120,000 kw, of which 40,000 was installed last fall and the remainder will be installed at a later date. The 180 x 200-foot building proper is 115 feet high and has 180 feet fronting on Kansas Avenue. The frame is of welded steel; the foundations and first 15 feet above street level are waterproof rein-

(Continued on next page)



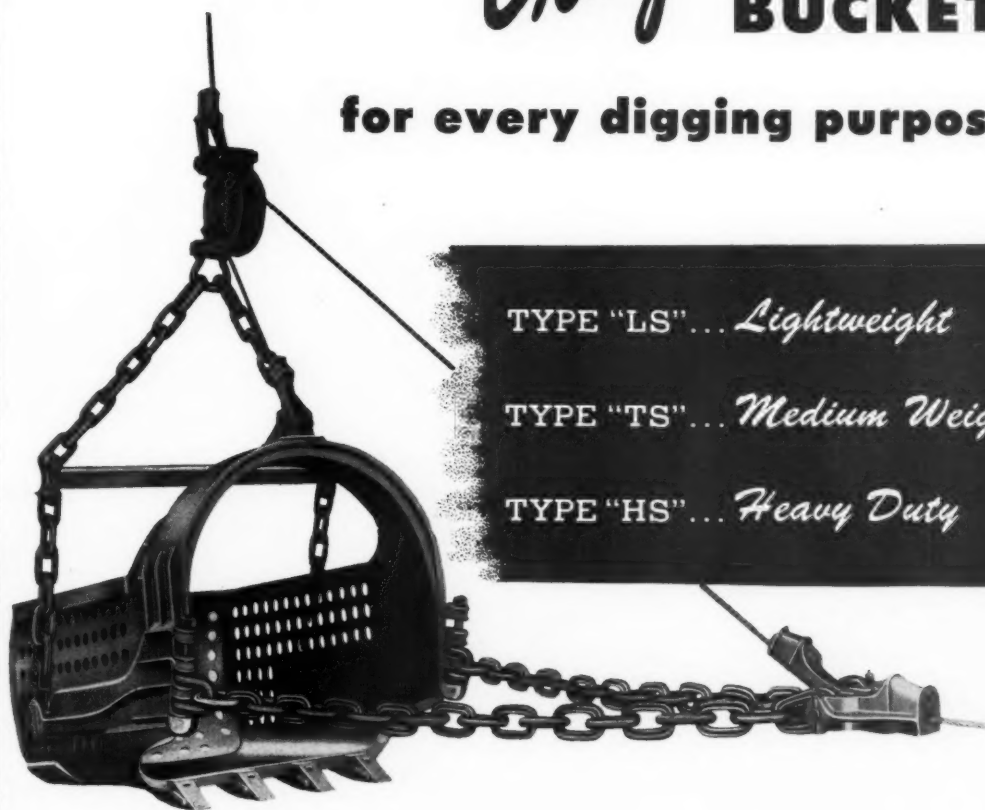
Personnel on the job: L. P. Kell, Project Engineer for Burns & McDonnell Engineering Co., designers; John Williams, District Manager and J. Guth, Job Superintendent for Raymond Concrete Pile Co.; H. L. Younger, Assistant Project Engineer, and H. H. Painter, General Superintendent for Patti Construction Co.

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3/8 to 40 Cubic Yards

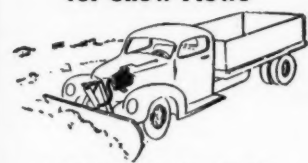
HENDRIX
Lightweight DRAGLINE
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Hendrix Buckets May Be Special Ordered
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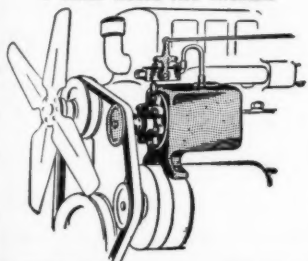
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MANSFIELD - LOUISIANA

POWER HYDRAULICS for Snow Plows



• Clutch Models Now Available

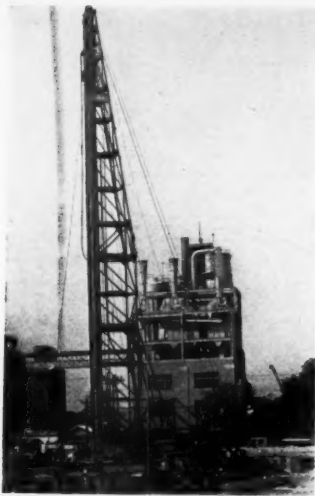


• THOUSANDS IN USE • FIT ALL TRUCKS
• FAN BELT OR ELECTRICALLY DRIVEN
MODELS

• Write Hydraulic Division

MONARCH ROAD MACH. CO.

323 N. Front Ave., Grand Rapids 4, Michigan



On the site of the Kaw Power Station project, Raymond Concrete Pile Co. uses a specially designed rig—a long-swing roller rig with a 40-hp boiler and 105-foot leads.

Floodproof Section In City Power Plant

(Continued from preceding page)

forced concrete; and the walls above this level are faced with brick.

The S. Patti Construction Co., Kansas City, Mo., has the contract for the main building at \$943,000 and the yard structure at \$609,000, which includes reinforced-concrete footings and pile caps, railroad tracks, coal and ash hoppers, condensate storage tanks, and other appurtenant structures.

Piling Details

The building is set on piling, and the Raymond Concrete Pile Co. had the contract for the approximately 900 Raymond Step-Taper cast-in-place piles. Raymond moved in one of its specially designed rigs—a long-swing roller rig with a 40-hp boiler and 105-foot leads. It had a single-action steam hammer designed for Raymond by Vulcan and handled the mandrel on which the Raymond shells were driven.

A portion of the depth of the pile holes was jetted to speed up and facilitate driving in the sand and silt formation of the river-bank location. Water for jetting came from a city water-main connection and was boosted up to the proper pressure by a multi-stage Goulds 6-inch pump, directly connected to a 100-hp electric motor. The jet nozzle was connected to the lead framework on the pile driver and cabled to one of the drums of the hoisting engine.

The general procedure with the jetted holes was to lower a Raymond shell into the hole; then to make up Step-Taper shells on the collapsible steel-pile core or mandrel which filled the inside of the shell while driving took place; and finally to drive to the established depth below the bottom of the jetted portion. Most of the piles were driven to a depth of 70 to 78 feet with the specifications calling for a bearing at a minimum point of elevation of 685 feet for a calculated load of 50 tons. Specifications also called for a variation of not more than $\frac{1}{4}$ inch per foot or not more than 4 inches after limit was reached. A final resistance of 6 blows per inch for the last 12 inches was considered final. Forty-two piles were re-

quired for the reinforced-concrete foundation for each turbo-generator.

Patti had 15,000 cubic yards of dirt excavation, which was handled prior to the pile-driving operation and was done with LeTourneau scrapers and D7 Caterpillar dozers.

Concrete

Floodproof qualities for the first level, extending 15 feet above street level, come not only from the concrete, but also from the thickness of the walls and the unique continuous steel sealing strips.

All structural joints have embedded sealing strips of black iron, $\frac{1}{2}$ inch in thickness and 8 inches wide, with continuous welded joints for the horizontal runs. These give a merry run-around to water seeking an opening. The strip was used in the joints between floors and walls as well as other structural joints, and one-half of the 8-inch width

was embedded in the first pour with the second pour catching the other half. While this type of watertight joint, using non-ferrous metals and open joints, is not particularly new, the use of heavier ferrous metals with welded joints is seldom encountered. It takes advantage of the easier welding of thicker metal and the noncorrosive action of steel embedded in concrete, since tests show that steel lasts indefinitely under such conditions.

Outside substructure walls are 14 inches thick with pilasters on 20-foot centers. The floor is a monolithic slab, 2 feet thick with a 1-inch cement topping.

All concrete is Class A structural concrete—6 sacks of portland cement mixed to the cubic yard with air-entrained admixture to entrain air $4\frac{1}{2}$ per cent plus or minus. The mixture is based on a 3-inch slump and a strength of 4,000 pounds at 28

days. Patti mixes the concrete on the job with a Mixermobile and a 3-bin Johnson batcher. A 2-cylinder, 7-inch Rex concrete pump is used in placing all of the concrete and a Chicago Pneumatic Hicycle electric vibrator to consolidate the pours.

All forms, carpenter-built on the job, are comparatively simple panels of $\frac{3}{4}$ -inch plywood with oiled facing backed up with 2 x 4 studs spaced at 18 inches, double 2 x 4 wales spaced at 28 inches, and Universal Twisties spaced at 24 inches and designed for a stress of 18,000 psi or an ultimate tie strength of 4,000 pounds.

Concrete is allowed to cure for seven days under wet cotton mats or by flooding. Concrete quantities in the Patti contract amount to 7,000 cubic yards.

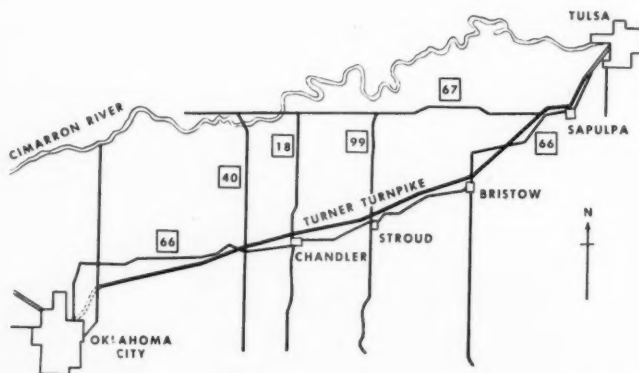
River Water Cools Condensers

The job of excavating, installing,



**Performance on the Turner Turnpike
makes the Allis-Chalmers AD-40 Grader**

A New Regular for Gillioz



One of the most modern highways in the Southwest will soon connect Oklahoma City and Tulsa, Oklahoma. Twin 24-foot roadways will save travelers almost a full hour of driving time on this 88-mile stretch; 12-foot paved shoulders, slight grades and long curves will make driving easier and safer, too.

CONTRACTORS AND ENGINEERS

and covering a 2,000-linear-foot circulating-water line of 6-foot-ID Lock Joint concrete pipe for cooling the condensers, fell to Patti. The line begins at the intake structure to be built in the Kaw River, runs to the condensers in the plant, and returns to the river, where it empties into a sealing weir which discharges into the river through an 84-inch-ID concrete pipeline. The sealing weir has a 48-inch concrete pipe connecting to the intake so that the warm water returning to the river may be diverted to the intake and diffused at the screens for partial control of ice in winter.

Excavation for this line from the river bank to the power house was done with a 1¼-cubic-yard Bay City crane equipped with a clamshell. The same machine was used for handling the joints of pipe by removing the clamshell and substituting a sling. The Lock Joint pipe

comes in 12 and 16-foot lengths with the short ones weighing 11 tons and the longer ones 15 tons.

The joints were forced together with a 5-ton conventional chain hoist set up with chains and bars through the centers. A rubber seal was used between lengths, and the lengths snapped together when the pressure was applied.

Intake and Sealing Weir

Contract for the intake structure and the sealing-weir structure was let to R. G. Aldridge, Kansas City, Kans., for \$600,000. The intake structure is located in the Kaw River and contains the intake mechanism for the 6-foot circulating water pipeline. It is built on a 60 x 48-foot concrete mat, 5 feet thick, which is supported by 90 to 53-pound steel H-bearing piles 45 feet long and driven to a 60-ton bearing in the bottom of the river. Elevation at the

bottom of the mat is 703 feet and elevation at the top of the intake building at the coping is 794 feet, a height of 91 feet from the bottom of the mat. (Mean low water in Kaw River is 723 plus or minus.) The mat is enclosed by steel-sheet piling to prevent scouring below.

The sealing weir, which is designed to eliminate back pressure on the discharge line, is located at the Kaw River levee and is on a 30 x 45-foot mat, also 5 feet thick, supported on 35 to 65-foot H-bearing piles. Its reinforced-concrete walls are 2½ feet thick from bottom elevation of 723 up to 760 elevation. From 760 to 775-foot elevation, the walls are 1 foot 3 inches thick. Elevation at the coping is 790 feet. This part of the project was strictly a caisson job.

Other Contracts

The main plant building contains 1,244,400 pounds of structural steel,



Here is a closeup of the structural joints with embedded sealing strips of black iron, ½ inch thick x 8 inches wide, with continuous welded joints for waterproofing.

and the fabrication contract was awarded to the Havens Structural Steel Co., Kansas City, Mo. Reinforcing steel for the job was furnished by the Ceco Steel Co., Kansas City, Mo.

Foster Wheeler Corp., New York, N. Y., will supply the condenser. A permanently installed indoor crane for setting machinery and future servicing, is a 100-ton outfit with a 25-ton auxiliary hoist. The steam generator is a Babcock & Wilcox boiler. The first of the two 40,000-kw turbo-generators will be supplied by Westinghouse Electric Corp., East Pittsburgh, Pa.

Landscaping

Municipal power plants in Kansas City, Kans., are designed to enhance the beauty of the country and furnish an example for other industries in making their facilities pleasing to the eye.

This trend is emphasized in the contract which prescribes the finished appearance of the Kaw River steam plant. For instance, all top soil in the primary excavation was required to be saved and stockpiled for use as replacement soil around the completed structure. Both for flood resistance and general permanence, the compaction of the fill around the building was specified at 95 per cent optimum under AASHTO Standard T99-49, which was increased as follows: 5-pound hammer weight increased to 10 pounds and drop of tamper increased from 12 inches to 18 inches.

Personnel

Burns & McDonnell Engineering Co., Kansas City, Mo., is the designing firm. L. P. Kell is Project Engineer and H. L. Younger is Assistant Engineer. For S. Patti Construction Co., Kansas City, Mo., which has 30 to 35 men on the job, H. H. Painter is General Superintendent. For Raymond Concrete Pile Co., which had a crew of 10 men, John Williams is District Manager with headquarters in Kansas City, Mo., and J. Guth is Job Superintendent.

Dayton Pump Sales News

Two new sales representatives have been appointed by Dayton Pump & Mfg. Co., Dayton, Ohio. Melville C. Sorrell will cover Kentucky and eastern Tennessee; Vernon R. Chesteen, Mississippi, Louisiana, Alabama, and western Tennessee.



Turner Turnpike in final stages of construction shows how it aims for horizon with arrow-like straightness. Right-of-way is 200 to 400 feet wide. Grades are maximum of 3 percent.

M. E. Gillioz, Monette, Missouri, was awarded three of the Turner Turnpike contracts; each for clearing, grading culvert work and fine grading. Gillioz, with half a century of experience in earth moving, has one of the largest contracting organizations with one of the biggest fleets of Allis-Chalmers tractors in the area. And now there's a new regular in the Gillioz fleet — an Allis-Chalmers heavy-duty AD-40 motor grader.

The AD-40 proved to Gillioz on his Turner Turnpike jobs that it represents real progress in motor grader design. His operators could see the front wheels and both ends of the blade well whether they were rolling big windrows or doing fine finishing. There are a number of reasons: (1) A-C's single member frame goes all the way from the front axle to the platform; (2) the front corners of the platform are tapered; (3) the size of the lift cases has been cut down to eliminate blind spots; (4) the control box has been lowered, and assemblies have been eliminated from the front panel to provide better visibility of the work area directly ahead of the operator.

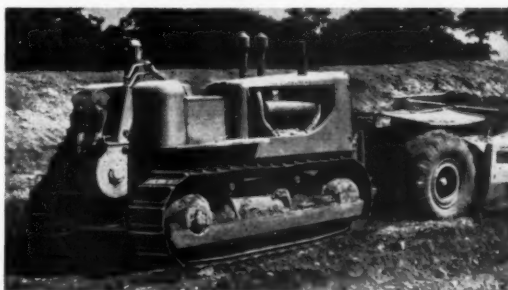
Gillioz men also like the operating comfort built into the AD-40. It has ample leg room for stand-up operation. And for easy, comfortable sit-down work, the AD-40 has a seat that rolls forward at a touch plus an adjustable-height steering wheel.

These advantages teamed up with a new kind of power steering and outstanding service simplicity to make the AD-40 a new regular for Gillioz. It will pay you to consider putting this job-proved grader on your team, too. See your nearby Allis-Chalmers dealer soon for all the facts.



Allis-Chalmers AD-40 finish grades one stretch of the new turnpike. The completed highway will be divided by 15-foot landscaped center mall.

An HD-20, one of the Gillioz fleet of ten Allis-Chalmers torque converter tractors, sends a rubber-tired scraper off to the fill with a flying start.



ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE 1, U.S.A.



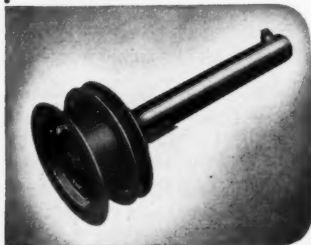
Engine for Shovel

A complete diesel power unit for small shovels is made by Harnischfeger Corp., Diesel Engine Division, Crystal Lake, Ill. The replacement package is built around P&H's Model 387-C 2-cycle 3-cylinder diesel engine of 60 hp. Included is all equipment for shovel installation: mounting brackets to fit the original engine bed, necessary controls and power connections, and reduction gear, if needed.

Simplified maintenance and greater accessibility are features of the shovel engine. The cylinder head and liner assembly can be replaced as a unit in less than one hour, according to the manufacturer. Replacement can be made in the field without dropping the oil pan.

For further information write to the company, or use the Request Card at page 18. Circle No. 460.

2 ways to make crane operations pay more



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- Steel tagline holds magnet steady and absorbs the load . . . protective slack is maintained in expensive magnet cable to avoid jerking, pulling loose at the terminals or snagging.
- Standard with major crane manufacturers, made in five sizes for your present equipment.



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The Anderson dual-jaw crusher takes a load of gravel. The manufacturer claims that the dual-jaw action produces up to 50 per cent more material than the single-jaw type.

Compact Gravel Plant

A portable gravel plant that features compact design and dual-jaw crushing action is made by Highway Machinery Co., 520 Frederick St., Waukesha, Wis. The unit has a capacity of 125 yards per hour, and requires no supporting jacks or blocks.

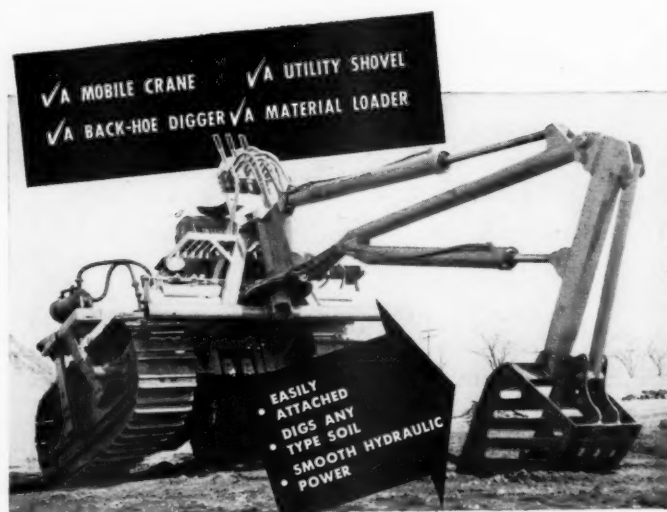
Other features pointed out by the manufacturer include self-cleaning grate bars on the receiving hopper, one-man operation, less vibration, and shorter conveyor lengths. The plant is powered by a 120-hp diesel engine. The unit is of compact design and is portable.

For further information write to the company, or use the Request

Card that is bound in at page 18. Circle No. 511.

Public Works Appointments

The New York State Department of Public Works has announced the following appointments: Elmer G. H. Youngmann, formerly Assistant District Engineer in Buffalo, gets the post of District Engineer in Rochester; James H. Thomas, former Assistant District Engineer in Binghamton, is District Engineer in Hornell; and Robert W. Sweet, who was Associate Civil Engineer in the Rochester office, becomes District Engineer at Watertown. Edgar N. Scott succeeds Mr. Youngmann in Buffalo.



Versatile HOPTO DIGGER Packs a profitable punch!

You can triple the work-capacity of your crawler-type tractor when you mount a versatile, low-cost HOPTO on the rear end. Does not interfere with 'dozing or other front end operations . . . and it can be quickly and easily attached or detached. Choice of shovel and bucket equipment or a crane for grapple or hook work

makes HOPTO the handiest and most profitable man on your crew. HOPTO digs deep, lifts high! Full 180° swing permits working a large area without moving equipment. Easily actuated hydraulic controls, fast cycling and a long reach make HOPTO a work-hungry handy man you can't afford to overlook.



TRUCK-MOUNTED AND TRAILER-TYPE MODELS ARE AVAILABLE
HOPTO may be truck mounted as shown at left. Self-powered and power take-off models are available as trailer-type units. Get complete information. It costs you nothing but the time to make the request. A HOPTO equips you to handle hundreds of jobs with a low equipment investment.

WRITE TODAY!
Tell us the type of unit in which you are interested and we will send complete specifications.

BADGER MACHINE CO.
WINONA, MINNESOTA • DEPT. E

Concrete-Finisher Bulletin

"The Detroit Story" is a bulletin prepared by Flexible Road Joint Machine Co., Warren, Ohio, to describe its portable Flex-Plane concrete-finishing machine. Telling the story of how five major Detroit contractors adopted the Flex-Plane, the booklet includes illustrations, performance figures, engineering reports, and contractors' comments.

The bulletin points out that a built-in pneumatic-tired hydraulic lifting rig enables the finisher to become its own trailer in a matter of seconds. The unit is available in widths adjustable from 10 to 20, 18 to 24, and 20 to 27 feet.

This literature may be obtained from the company by requesting Bulletin M-112, or by using the Request Card at page 18. Circle No. 539.

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NOTICE the leveling screws on the instrument leveling head above. See how they are always totally enclosed—regardless of their position "in" or "out". This means all dust and dirt are sealed out—their precision sealed in.

This is just one of the many extra protective refinements, extra features that guarantee you extra-long life and super precision results with David White Instruments. There are other things too—the waterproof compass box, the overall weatherproof morocco finish—coated optics—hand-fitted, anti-friction, virgin hard, bell metal centers—plus the David White improved plate levels with counter adjusting springs.

Yes, for instruments that guarantee you the extra in precision and long life you want—it's David White . . . makers of finest quality instruments for over 40 years. For detailed information about the complete David White line of Transits, Universal Level Transits, Levels, Theodolites and engineering supplies, write today for Catalog No. 1052.

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CONTRACTORS AND ENGINEERS

Beach-Grass Problem

The longest man-made sand beach in the world (26 miles), located on the Mexican Gulf in Harrison County, Miss., presented a problem. Grass seeds from the marshes of the outlying islands are washed ashore daily by the tides and the grass spreads quickly and grows high. However, two Seaman Pulvi-Mixers, Models D-47, have provided the solution.

With the tynes set to cut 6 to 8 inches deep into the sand, the machines are run over the grassy areas. The hoods of the machines are raised, and the sand and grass (roots and all) are thrown high into the air. The grass, falling more slowly than the sand, is left on top of the sand to be dried and killed by the sun. Two or three days later, the dead grass is raked, hauled away, and disposed of.

The white-sand beach stretching along U. S. 90 was originally intended as a protection for the seawall and as an erosion project. Tourists, however, have discovered that it is a fine spot for a sun bath and a safe swim.

Truck-Tire Model

A new truck tire is introduced by United States Rubber Co., Tire Division, Rockefeller Center, New York 20, N. Y.

Features of the new truck tire are a wider center rib with narrow outer ribs, heat-resistant ventilated shoulders, and 5-row rib structure up to and including 10-inch cross section. Above this size a 7-row rib structure is used. Double shock pads impregnated with tread rubber are bonded permanently to the carcass to prevent tread separation. Steel bead wires are bronze-plated to prevent corrosion before being insulated with rubber. The tire has a flatter road-level profile to put more working rubber on the road.

For further information write to the company, or use the Request Card at page 18. Circle No. 437.

A Valuable Handbook

Snow removal, street cleaning, refuse collection and disposal, and street construction and maintenance are covered in 109 pages in the "Municipal Official's Handbook", by William S. Foster. The material originally appeared in abbreviated form as a series of articles in *The American City Magazine* from November, 1950 to January, 1952. Since then, additional information has been added, together with more illustrations and charts.

Much of the material, collected by the author in his capacity as Engineering Editor of *The American City*, was gathered by firsthand visits, and all of it has been carefully



A Seaman Pulvi-Mixer pulled by a Caterpillar tractor makes short work of the beach-grass problem in Harrison County, Miss.

reviewed by the responsible officials who have been successfully using the practices described in the text. The 8½ x 5½-inch book, paper-

bound, is available from The American City Magazine Corp., 470 Fourth Ave., New York 16, N. Y. It is priced at \$3.00 per copy.



4 powerful reasons why you get more of what you want in 1953 CHEVROLET Advance-Design Trucks

MORE TRUCK FOR LESS MONEY! Chevrolet trucks list for less than any others of comparable specifications. Yet they bring you features and advantages found in few other trucks. For example, the advanced Loadmaster engine—standard in 5000 and 6000 Series heavy-duty and forward-control models (optional on 4000 Series heavy-duty trucks)—now has a new high-compression ratio of 7.1 to 1, and delivers even more horsepower than before.

FACTORY MATCHED TO YOUR JOB! Every unit of the Chevrolet truck you buy is balanced to the job. Tires, axles, springs, engine, frame, body and brakes form a team carefully engineered for the greatest efficiency—and the lowest cost.

GREATER VALUE IN FEATURE AFTER FEATURE! Two great valve-in-head engines—the Thriftmaster and the Loadmaster—provide greater gasoline economy. Hypoid Rear Axle, Unit-Designed Bodies, Flexi-Mounted Cabs and many other Advance-Design features offer value unmatched by any other truck at such low cost.

MORE RUGGED THAN EVER! In 1953, Chevrolet trucks are even sturdier. Bigger, more durable brakes on many models; heavier, more rigid frames and stronger construction lengthens truck life and lowers your hauling costs. See your Chevrolet dealer. Chevrolet Division of General Motors, Detroit 2, Michigan.

Gasoline-Powered Hammer

A gasoline-powered hammer is the subject of a catalog by the Barco Mfg. Co., 1801 Winnemac Ave., Chicago 40, Ill. Typical applications described include concrete breaking, asphalt cutting, frost breaking, ground-rod driving, rock drilling, stake driving, and sheathing driving.

The hammer is self-powered, portable, and can be operated by a single man. New models feature an improved ignition system for starting and stopping. Standard hammers deliver up to 1,700 strokes per minute with a gasoline consumption of approximately a quart an hour. A choice of tool bits and accessories, including exhaust blowers and air blowers for drilling work, are available from the manufacturer.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 476.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—the Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load. **POWER-JET CARBURETOR**—for smooth, quick acceleration response. **DIAPHRAGM SPRING CLUTCH**—for easy-action engagement. **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **HYPOID REAR AXLE**—for dependability and long life. **TORQUE-ACTION BRAKES**—on light-duty and medium-duty models and on front of heavy-duty models. **TWIN-ACTION REAR BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—for greater holding ability on heavy-duty models. **CAB SEAT**—with double deck springs for complete riding comfort. **VENTI-PANES**—for improved cab ventilation. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—for easier handling. **UNIT-DESIGNED BODIES**—for greater load protection. **ADVANCE-DESIGN STYLING**—for increased comfort and modern appearance.



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Convention Calendar

February 17-19—Concrete Convention

Annual Convention, American Concrete Institute, Statler Hotel, Boston, Mass. William A. Maples, Acting Secretary-Treasurer, 18263 W. McNichols Road, Detroit 19, Mich.

February 23-26—National Sand & Gravel and National Ready Mixed Concrete

Annual Conventions, National Sand & Gravel and National Ready Mixed Concrete Associations, Fairmont Hotel, San Francisco, Calif. V. P. Ahearn, Executive Secretary, 1325 E St., N. W., Washington 4, D. C.

February 24-26—Illinois Conference

Thirty-ninth Illinois Annual Conference on Highway Engineering, University of Illinois, Urbana, Ill. Wm. S. Pollard, Jr., Department of Civil Engineering, University of Illinois, Urbana, Ill.

February 25-28—Concrete-Pipe Meetings

Fourth Annual Convention, American Concrete Pressure Pipe Association and Forty-fifth Annual Convention, American Concrete Pipe Association, Baker Hotel, Dallas, Texas. Howard F. Peckworth, Managing Director, 228 N. LaSalle St., Chicago, Ill.

March 2-4—Utah Highway Conference

Annual Utah Highway Engineering Conference, Union Bldg., University of Utah, Salt Lake City, Utah. A. Diefendorf, Conference Director, Department of Civil Engineering, University of Utah, Salt Lake City, Utah.

March 2-6—ASTM Meeting

Spring Meeting and Committee Week, American Society for Testing Materials, Hotel Statler, Detroit, Mich. Robert J. Painter, Executive Secretary, 1916 Race St., Philadelphia 3, Pa.

March 2-6—ASCE Meeting

Spring Meeting, American Society of Civil Engineers, Fairmont Hotel, San Francisco, Calif. Don P. Reynolds, Assistant to the Secretary, 33 W. 39th St., New York, N. Y.

March 4-6—AHONAS Convention

Annual Convention, Association of Highway Officials of the North Atlantic States, Hotel Traymore, Atlantic City, N. J. A. Lee Grover, Secretary-Treasurer, 1035 Parkway Ave., Trenton, N. J.

March 5-7—Mississippi Valley Conference

Annual Mississippi Valley Conference of State Highway Departments, Edgewater Beach Hotel, Chicago, Ill. H. L. Aitken, Secretary, Nebraska Department of Roads and Irrigation, Lincoln, Nebr.

March 16-20—NACE Convention

Ninth Annual Conference, National Association of Corrosion Engineers, Hotel Sherman, Chicago, Ill. A. B. Campbell, Executive Secretary, 1061 M & M Bldg., Houston 2, Texas.

March 18-20—New York Highway Engineers

Annual Convention, New York State Association of Highway Engineers, Hotel Statler, Buffalo, N. Y. William Gallancy, Convention Chairman, State Department of Public Works, 65 Court St., Buffalo 2, N. Y.

March 23-25—Surveying and Mapping

Thirteenth Annual Meeting, American Congress on Surveying and Mapping, Shoreham Hotel, Washington, D. C. Murray Y. Poling, Meeting Chairman, U. S. Coast & Geodetic Survey, Washington 25, D. C.

March 23-27—AGC Convention

Thirty-fourth Annual Convention, Associated General Contractors, Miami Auditorium, Miami, Fla. Charlson I. Mehl, Administrative Aide, Munsey Bldg., Washington 4, D. C.

March 24-27—New York Safety Council

Twenty-third Annual Safety Convention and Exposition, Greater New York Safety Council, Hotels Statler and New Yorker, New York, N. Y. Paul F. Stricker, Executive Vice President, 60 E. 42nd St., New York 17, N. Y.

April 6-9—Purdue Road School

Purdue Road School, Memorial Union Bldg., Purdue University, West Lafayette, Ind. Prof. Ben H. Petty, Civil Engineering Bldg., Purdue University, Lafayette, Ind.

April 8-9—Earth-Moving Conference

Annual Conference, Earth-Moving Industry, Hotel Pere Marquette, Peoria, Ill.

Harlow H. Piper, Engineering Dept., Caterpillar Tractor Co., Peoria, Ill.

April 10-11—Michigan Engineering Meeting

Annual Meeting, Michigan Engineering Society, Kellogg Center Hotel, Michigan State College, East Lansing, Mich. Joseph E. Wilbur, Executive Secretary, P. O. Box 573, Kalamazoo, Mich.

April 13-15—Lubrication Engineers

Annual Meeting and Lubrication Exhibit, American Society of Lubrication Engineers, Hotel Statler, Boston, Mass. William P. Youngclaus, Jr., Administrative Secretary, 343 S. Dearborn, Chicago 4, Ill.

April 13-15—South Dakota Short Course

South Dakota Highway Short Course, Student Union Bldg., South Dakota State College, Brookings, S. Dak. Prof. Emory E. Johnson, Civil Engineering Dept., State College Station, S. Dak.

April 28-30—Wood Preservers' Convention

Annual Convention, American Wood Preservers' Association, Cleveland Hotel, Cleveland, Ohio. Harry J. Schulte, Hotel Committee Chairman, 20106 Kinsman Road, Cleveland 22, Ohio.

Buy U. S. Defense Bonds.

Magnifies Slide Rule

A new double magnifier for slide rules is marketed by Flatto Management Co., 70 West 40th St., New York 36, N. Y. The P. E. G. Duplex magnifier enlarges figures on both sides of a duplex slide rule. It consists of two lenses, and folds for carrying.

A special version which has a magnifying power of 3 times has been made for pocket-sized slide rules. Four other sizes are available for slide-rule widths from 1 $\frac{1}{16}$ inches to 1 $\frac{3}{4}$ inches. These have a magnifying power of 2 $\frac{1}{2}$ times.

For further information write to the company, or use the Request Card at page 18. Circle No. 442.

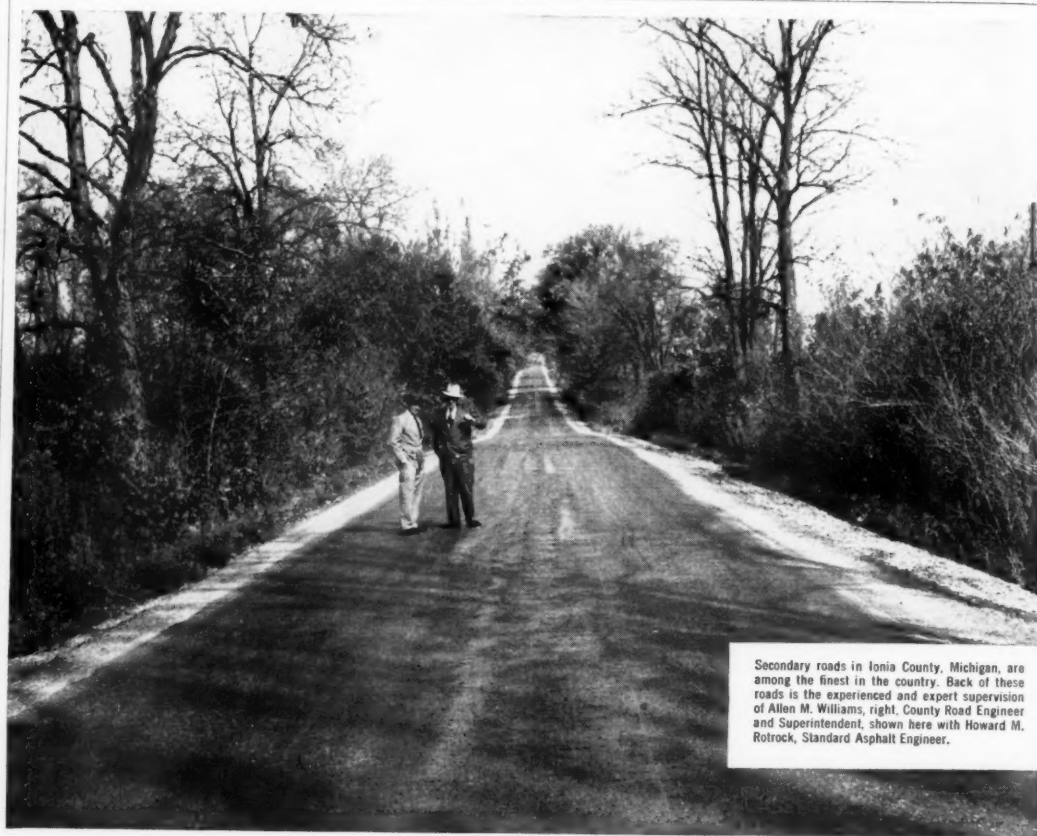
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ALL-PURPOSE GRADER
DITCHER & TERRACER



The "HUSKY" maintains roads and shoulders better at half the cost.

Finishes slopes and ditches better and faster. One man hydraulic job recommended for contractors. Guaranteed against breakage first year. Three sizes \$540 to \$1570. Will save you a lot of money.

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Secondary roads in Ionia County, Michigan, are among the finest in the country. Back of these roads is the experienced and expert supervision of Allen M. Williams, right, County Road Engineer and Superintendent, shown here with Howard M. Rotrock, Standard Asphalt Engineer.

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greater binding quality, faster setting, and blacker appearance. That means longer-lasting, better-looking secondary roads can be constructed in less time and at lower cost.

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CONTRACTORS AND ENGINEERS

Income-Tax Quiz Helps Contractors

Check Your Knowledge With This Brief "Tax I. Q." as Federal-Tax Deadline Approaches

Do you know your Federal taxes; what they can do to you; what you can do to them? March is Federal income-tax time, so better start thinking if you haven't already done so. The American Institute of Accountants (national professional society of certified public accountants) has come up with a 3-minute quiz. Try it, contractors. Never mind about the 3 minutes (that's just AIA optimism), but try it anyway. Then check the answers at the end of this article.

The Quiz

1. Your son worked for you in your contracting business last summer, and you paid him a total of \$591. He also won \$10 in an advertising-slogan contest. You can—

- (a) Take a full \$600 dependency exemption for him;
- (b) Take a half exemption;
- (c) Take no exemption.

2. While on vacation with your wife last summer, you entertained several subcontractors you do business with. Is this—

- (a) Deductible as a business expense?
- (b) Not deductible, since you were vacationing at the time?
- (c) Deductible only if you and your wife file a joint return?

3. You made a nonbusiness loan of \$2,000 to a friend last March, and he promptly disappeared, leaving absolutely no trace. You can probably—

- (a) Deduct the full amount as a bad debt on your 1952 return;
- (b) Deduct only half of it;
- (c) Take no deduction at all.

4. You earned more than \$3,600 in your contracting business. The social security tax is—

- (a) Not levied on your own income;
- (b) \$81, paid with your income-tax return;
- (c) \$54, paid to the Social Security Board;
- (d) \$54, paid with your income-tax return.

5. You failed to take all your allowable deductions on your 1950 return. You can—

- (a) No longer file a claim for a refund;
- (b) File a refund claim as late as 1954;
- (c) Stop worrying, since you will get a refund automatically.

6. Your wife works for you in your contracting business. She—

- (a) Is required to pay social security;

(b) Is not subject to social security;

(c) Can choose whether she does or does not want social-security coverage.

7. There are a few leaks in the shingle roof of your office building, so you construct a new tile roof. Taxwise, the cost is—

- (a) Deductible as a repair;
- (b) Deductible in the current year as an improvement;
- (c) Depreciable—a portion deductible each year of its useful life.

8. In determining your taxable income, which of the following taxes you pay is not allowed as a deduction?

- (a) Real-estate tax;
- (b) State income tax;
- (c) State inheritance tax;
- (d) Motor-vehicle license fee.

The Answers

Now—did you get top marks?

1. (c) Your son's prize here would be considered taxable income. That raises his total income to \$601, and he cannot qualify as a dependent if he has an income of \$600 or more.

2. (a) The amounts spent should be deductible as business expenses, if you kept a careful record which lists them in detail, and shows clearly that the entertainment was with a predominating business motive and not merely reciprocal, or incidental to the vacation.

3. (b) A nonbusiness bad debt is a capital loss. And you can take only \$1,000 a year in capital losses—unless you can apply them against capital gains. You are allowed to carry over unused losses for 5 years; you had better get expert advice on this one.

4. (b) Assuming your income is
(Concluded on next page)

You can go down and get it 15" below grade



You can go up and get it 15 feet above grade



—and do it with CROWD AND HOIST . . .
no wheel traction . . .

If you are doing excavation work you probably realize the mechanical advantages of big shovels—simultaneous and independent hydraulic crowding and hoisting, variable crowd action at any dipper position, changeable buckets, etc. But, do you know all these advantages have been engineered into the Dempster-Diggster to give you a faster, more versatile excavator, on pneumatic tires with a 1 cu. yd. capacity. In addition the Dempster-Diggster does anything a conventional front end loader can do—and does it faster at less cost with its 1½ or 2 cu. yd. bucket. In excavation the Dempster-Diggster is without equal for working in tight places . . . dumps at 11'3" height . . . travels at truck speeds from job to job. The versatile Dempster-Diggster is a fast, power-packed excavator and loader you can't afford to be without! Write today for our new catalog No. 1032. A product of Dempster Brothers, Inc.



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Income-Tax Quiz Helps Contractors

(Continued from preceding page)

classified as self-employment income (see tax instructions) and is not from engaging in an exempt profession, a tax of 2 1/4 per cent on the first \$3,600 is due with your income-tax return—so you owe \$81.

5. (b) In this case, you can file a claim for refund within 3 years from the date your return was due.

6. (b) If your wife works for you, you are not supposed to pay social-security taxes on her salary, nor is she supposed to make her contributions.

7. (c) The roof is an improvement, not deductible currency like ordinary repairs. Its cost is deductible as depreciation spread over its estimated useful life.

8. (c) Inheritance taxes are not

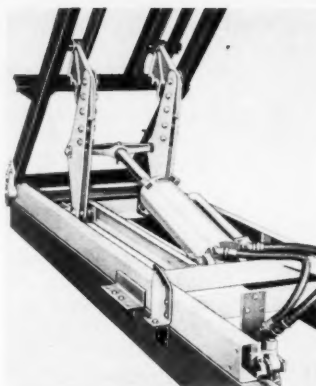
deductible. The others listed are deductible.

New Dump-Truck Hoist

A new hydraulic hoist has been announced by the Galion Allsteel Body Co., Galion, Ohio. The Model 770 has been redesigned for installation in a wider range of motor trucks and is recommended for use on 8 to 12-foot dump bodies. Load capacity is from 10 to 14 tons suitable for medium-duty contractor operations.

The unit has an all-steel sub-frame, cast-steel rear hinges, and a forged-steel crosshead. Lift arms are made from heavy fabricated steel plate. They have heavy-duty bronze bushings and grease fittings.

Dump angle is 50 degrees and mounting height 14 5/8 inches. The



unit weighs 950 pounds.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 410.

Preheater for Engines

Literature on its electric preheater for diesel and gas engines is available from Kim Hotstart Mfg. Co., W. 917 Broadway, Spokane 11, Wash. The heater plugs into any electrical outlet and through a percolator-like action keeps the engine ready for starting even when vehicles are stored outside in subzero weather.

The attachment is said to effect economies in warmup time, engine wear and maintenance, battery life, fuel consumption, and storage space. Typical installations are shown in the booklet and specifications are listed for various sizes and types of engines.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 538.

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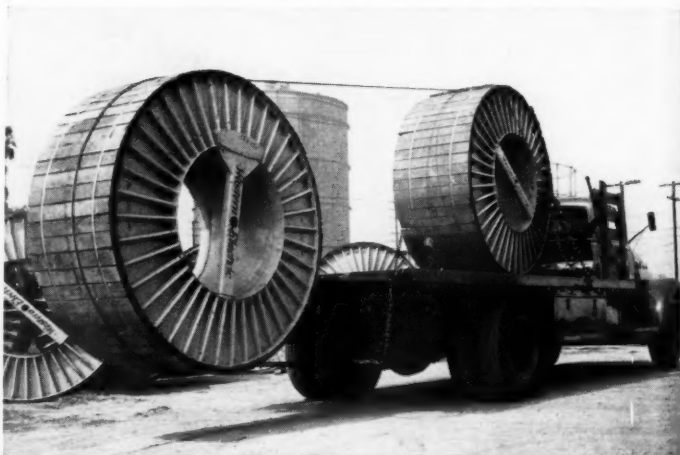
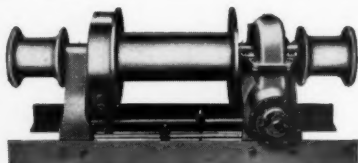
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TULSA TRUCK POWER WINCHES FOR LOADING

in construction, oil fields, public utilities and commercial hauling, the favorite time and labor saver is a Tulsa Winch. Literally hundreds of heavy and difficult jobs can be handled quickly, easily and safely with a Tulsa Winch. Heavily constructed of the finest materials, Tulsa Winches pay for themselves every day through untroubled performance. Equip your trucks and crawler tractors NOW with Tulsa Winches.

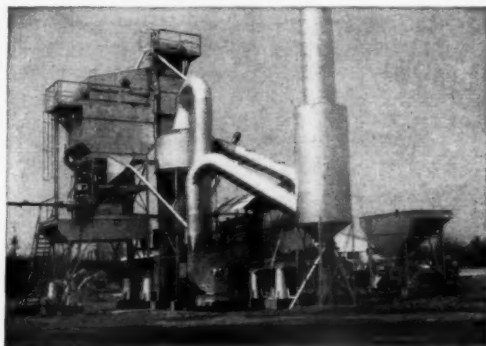


Tulsa Winch-equipped truck used by a public utility company shown loading 3-ton cable reels with a Model 23 Tulsa Winch.

Tulsa* Winch
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TULSA, OKLAHOMA
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*Reg. U. S. Pat. Off.

Contractors Are Making Highway History with Dependable, Profitable CUMMER ASPHALT PLANTS



The CUMMER Asphalt Plant pictured here, owned and operated by Asphaltic Concrete Co., Rochester, N. Y. consistently produces 80-100 tons per hour (based on 5% initial water content, dried to within 1/2 of 1% and heated to 350° to 400°F.)

Located in a congested area, this complete plant is equipped with dust elevator, washer, enclosed hot elevator, and is electrically powered. Each unit is individually driven.

FAMOUS CUMMER ASPHALT PLANTS, ruggedly built for years of service, are designed to increase the profit and efficiency of your highway construction operations.

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THE F. D. CUMMER & SON COMPANY

Pioneer Builders of Fine Asphalt Plants

CLEVELAND 14, OHIO

Divided Expressway On Caliche Subbase

Twenty-Year-Old Texas Asphalt Highway, Still Intact,
Is Improved by Addition of Urban Approaches

• TWENTY years ago, a then-modern 22-foot asphalt highway was built at both sides of Odessa, Texas, on U. S. 80. Today that road is somewhat more than famous, because it was built so well that traffic could never wear it out. The old highway, still intact, recently formed the center of a modern \$484,190 contract job with Collins Construction Co. of Texas.

Many of the lessons learned in the original construction were put to good use on Collins' job. Even the engineering design is similar. Excellent subgrade soils with a plasticity index under 15, along with native caliche pits for subbase with PI's under 6, combined to make the old road impregnable to traffic. So, although the new improvement makes an 80-foot urban expressway at both edges of Odessa, it is similar in surface and subbase to the old.

Collins' job included grading, drainage, base, curb and gutter, storm-sewer construction, and paving. Major items were: 8,000 feet of 30, 36, 21, and 42-inch storm sewer; 40,000 cubic yards of earth excavation; 7,000 cubic yards of rock excavation; 42,000 cubic yards of caliche base; and 20,000 tons of hot-mix asphaltic-concrete pavement 2½ inches thick. Started March 23, the project was finished last fall, well ahead of the bad weather. Known by its Federal-Aid number of F-235 (13), the project is 2.97 miles long.

Expressway Design Made

The new improvement is in every respect a modern expressway. Of the whole job, 1.3 miles is located east of Odessa, with the remainder starting at the westerly city limits and running westward. The east portion is an 80-foot roadway with concrete curb and gutters, and a raised concrete median strip making a 3-foot dividing island. There are teardrop refuge islands at the median-crossover points.

The west portion is similar, with curb and gutters, but without the dividing median. Of special interest is the fact that the old base was duplicated, first by compacting the native subgrade to 95 per cent of Proctor optimum, and then by installing 10 inches of crushed caliche in twin 5-inch courses. The caliche was crushed to a minus 2-inch specification.

The base course of asphaltic concrete is Texas' Type C mix; a ¾-inch-minus aggregate with about 6½ per cent of OA-135 asphalt. A 1-inch surface course went on top, consisting of Type D: a ½-inch mix with approximately the same percentage of OA-135. This material was mixed by Collins' Barber-Greene continuous-mix asphalt plant, set up south of Odessa for a major street-paving job in the city, and laid by the com-

pany's Barber-Greene asphalt finisher. The job did not call for a sealcoat.

Grading

The terrain around Odessa is flat, so no heavy cuts or fills were necessary when the grading was done. However, some 7,000 cubic yards of

(Continued on next page)



A Koehring 605 power shovel loads the Koehring Dumptors which haul raw pit-run material to the Pioneer reduction plant in the rear on the Texas expressway job. Ray Day Photo

How U. S. Rubber belt engineers cut installation costs



View of 24" U. S. Giant Conveyor Belt carrying aggregate from mixing hopper to loading hopper in plant No. 2, Builders Supply Co., Houston, Texas.



Junction between cross belt and incline belt. They convey the aggregate to concrete mixing tower, which in turn supplies the waiting trucks.

In a new concrete mix plant, original plans called for the installation of a 5-ply, 36 oz. duck conveyor belt to handle the aggregates. But United States Rubber Company engineers pointed out that their 4-ply, 42 oz. duck belt would not only cost less, but would be more flexible crosswise to trough, would train more easily and provide high-tensile strength as well. This 1,275-foot, 4-ply U.S. Giant Conveyor Belt was installed. It travels 300' per minute and delivers 294 tons per hour.

This is another instance of why it pays to consult "U.S." engineers before going ahead on a conveyor belt problem. Remember that they are backed by a wealth of experience and vast research facilities. Finally, they will work with your engineers and with the designers of conveyor equipment—a 3-Way Engineering teamwork that always pays off in higher output at lower cost. Write to address below.

PRODUCT OF



UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Divided Expressway

On Caliche Subbase

(Continued from preceding page)

hard caliche at the east end of town had to be ripped up by a LeTourneau K30 Rooter, pulled by a D8, and mucked out. The ripper handled it nicely, and no powder or drilling was necessary.

The grading fleet consisted of six Caterpillar DW10's with a D8 push-loading in the pits. Hauls were generally about 2,500 feet or less, and the earth, when it was dumped and spread, invariably needed water. It was hauled in by a 4,000-gallon unit, a 3,000-gallon truck, and three 2,000-gallon and one 1,500-gallon trailer. This was a lot of water capacity, but the material took plenty, and later on, the caliche base needed a lot. Compaction of the earth was by sheepfoot and



A Dumptror puts raw material in the trap as the Pioneer jaw reduces it in size.

pneumatic rollers. The necessary storm-sewer pipe was installed just ahead of grading.

Important Base Construction

Unquestionably one of the most important parts of the project was

the production and installation of the caliche base. The old one had worked so successfully, after being put down two decades ago by steel-wheeled rollers, that everybody was determined to do an equally good job with present-day equipment.

How McKIERNAN-TERRY equipment helped this unusual pier construction job



A McKiernan-Terry S-5 Single-Acting Pile Hammer being used to drive sand drains for the new Pier 57 in New York. O'Brien Brothers, Inc., and Quist Construction Co., Inc. were the contractors.

New York's new Pier 57 consists of 3 huge reinforced concrete boxes, weighing a total of 73,000 tons. These massive supports were built 38 miles away, floated down the Hudson River to the pier site, and then placed in position.

The load of the assembled pier is largely carried by the buoyancy of these concrete boxes, which rest on a gravel blanket. Under this blanket, the river silt has been stabilized by 304 sand drains, and anchored by piles which serve as dowels.

The sand drains and the timber piles were driven by McKiernan-Terry 10-B-3 Double-Acting and

S-5 Single-Acting Pile Hammers. Many difficulties were encountered on the job, due to the hard subsoil close to shore and interference from the wooden piles which had supported the old pier. However, the powerful McKiernan-Terry Pile Hammers met every demand . . . one more instance of how the reliance of contractors on McKiernan-Terry equipment is fully justified.

Write for full information on McKiernan-Terry Pile Hammers and the application of McKiernan-Terry equipment to sand drain soil stabilization.

OTHER McKIERNAN-TERRY PRODUCTS



MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES
Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.



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Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.



HONING UP TO

42-IN. I.D. X 53-FT. LONG
Typical of the extensive facilities of McKiernan-Terry for unusual jobs.



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Plants: Harrison, N. J. and Dover, N. J.

Specifications for this caliche base called for: 100 per cent passing a 2-inch screen; 50 to 85 per cent retained on the No. 40; a plasticity index of 12 or less; a linear shrinkage of 7 or less; and a liquid limit of 40 or less.

An excellent pit was located along the highway just west of Odessa, in almost the same spot where the caliche for the old base had been taken many years ago. It is a solid formation with occasional lime-rock boulders embedded in the other material. The formation was such that drilling and shooting were necessary.

The pit ran about 18 to 20 feet deep on a uniform basis, and project officials decided to save a lot of drilling time and effort. An Ingersoll-Rand wagon drill was extended to allow the drill carriage to have enough travel to take a 12-foot bit right from the start. This trick eliminated starting with a 6, and increasing to a 12 after one steel change. Timken throwaway bits were used, and in caliche they often drilled from 8 to 10 holes 18 feet deep. The holes were bottomed at 2 inches. Power was supplied to the drill by a 220-cfm Gardner-Denver compressor.

The holes were regularly spaced on a staggered grid system from 12 to 15 feet center to center, depending on the amount of hard limestone boulders. As a rule, each hole was sprung with 3 to 8 sticks of Atlas 60 per cent gelatin, and the pocket was then heavily loaded with Atlas Flo-dyne No. 4 to do the necessary breaking. About 1 1/4 pounds of this powder per cubic yard was used, especially in the harder material.

Broken rock was loaded against an 18 to 20-foot face by a Koehring 605 power shovel, which dumped from 2 to 3 dippers into a fleet of 3 Koehring Dumptrors. The Dumptrors were only about 300 feet to the crusher trap from any part of the pit. They spaced beautifully under the shovel, and at almost any time one looked, one of the machines would be under the shovel, one would be traveling, and one would be dumping.

Pioneer Plant Sizes Caliche

The reduction plant which crushed and screened the caliche was an all-Pioneer outfit, consisting of a feeder, jaw-crusher unit, secondary roll-crusher unit, screens, surge bin, and connecting conveyors.

Raw material moved through the plant over an apron feeder whose normal 12:2-drive sprocket had been increased to 30:2 to speed up the plant input. At the same time, to take this heavy overload, all bronze-bearing bushings were replaced with double-rolled bearings. The apron feeder placed the pit-run ma-

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CONTRACTORS AND ENGINEERS

material on a heavy grizzly set for 3-inch clearance. Smaller material passed through this screen to the main conveyor leading up to the screening plant and roll crusher. Material retained on the grizzly went to a Pioneer 24x36 jaw crusher, driven by a Murphy ME-66 diesel, which reduced it in size. Throughs from the jaw joined the other material passing up the main conveyor.

The main conveyor belt discharged the material to a double deck of Pioneer screens, containing 2½ and 1½-inch mesh on the top and lower decks, respectively. Throughs from these screens were immediately pulled from the mix and passed to a 25-yard surge bin, where trucks were loaded. Material retained on the screens was chuted down to a Pioneer roll crusher, also powered by a Murphy ME-66 diesel, arranged in closed circuit with the screens. The finished material went into the surge hopper with the native material originally meeting the specifications.

A somewhat unusual innovation in transferring crushed caliche from this bin to hauling trucks was devised. An apron feeder was made in Collins' shop. When calibrated, it was accurate in its delivery to ¼ cubic yard. A Hydrashift fluid drive was put on to take the shock of starting off the system. It operated from the Murphy roll-crusher diesel. Project officials estimated that this feeder saved about \$30 per day in labor costs, which otherwise would



A Caterpillar No. 12 motor grader blade-mixes the caliche with water, prior to the laydown. Collins Construction Co. of Texas was the contractor. Ray Day Photo

have been necessary if the company had had to hire men to level off the loads. It also saved valuable truck time. It was accepted by the Texas State Highway Department and, after repeated checking, was amazingly accurate on a job.

Some good production figures were racked up on this caliche pit. The plant was rated at 140 cubic yards an hour, but the field stepping up for overload conditions made it possible for the plant to turn out 2,500 cubic yards per 9-hour day. The week the project was visited, the plant had rolled out 10,050 cubic yards in 4 days.

Placing the Caliche

It is not enough to blast, load, and

large extent, how well the base will stand up under traffic.

The material was hauled out to the job by 6 White-towed Schonrock cable-controlled trailers, which hauled 10 cubic yards, or 30,000 pounds, per trip. There were also seven 5-yard rented dump trucks.

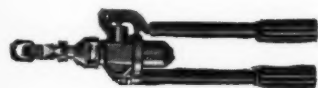
The material was dumped on the highway according to measured distances and in sufficiently great volume to lay a 5-inch compacted course at one time. For every 3,000-foot mixing lane, about 8 hours of motor-grader operation was necessary to blade and blend the caliche. While this was under way, the various water-tank trucks were busy hauling from 100 to 125 gallons of water per cubic yard to wet the material.

When a good blend of water and caliche particles had been made, two No. 12 Caterpillar motor graders cui

(Concluded on next page)

The Right Cutting Tools

CAN CUT YOUR COSTS, TOO!



MODEL 200-A

NEW, POWERFUL, HAND OPERATED HYDRAULIC CUTTER

Cuts ½" reinforcing rod and other comparable materials with ease. Simple hand pump action develops 8500 p.s.i. exerting 10 tons cutting force. Blades easily removed for resharpener. Weight - 15 lbs. Length - 24".

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Cut reinforcing rod, chain, bolts, wire rope

NEW IN BOLT CUTTERS!

Reversible Jaws Give Double Blade Life

New, exclusive design gives you twice the cutting life from one set of jaws. Handles are guaranteed against breakage. Available in 30" size. Capacity, ½" bolts, ¾" rod. Jaws alone available to fit standard 30" bolt cutters.



MODEL 2 MCC

PORTABLE HYDRAULIC GUILLOTINE

Heavy-duty hydraulic cutter provides 22½ tons cutting force yet weighs only 40 lbs. Cuts ¾" reinforcing rod, 1" log chain. Other similar models to cut wire rope. Easy hand pump action. Also available with a variety of power pump units for high speed production cutting.



MODEL 20-A

See Your Distributor or

Write **MANCO MFG. CO.,** BRADLEY, ILLINOIS

FEBRUARY, 1953

size caliche to the proper specifications. Its placement is also important, and the proper manipulation of a caliche base determines, to a



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Here's Why... There are fourteen different models in the Gar Wood line of Tipdozers and Dozercasters — each perfectly matched to Allis-Chalmers tractors... If you choose cable operation, Gar Wood's model 281 cable control unit can easily handle both dozer and scraper work—planetary gearing gives smooth, easy operation... TIPDOZERS have tip screws for vertically adjusting either end of moldboard up to 12". DOZERCASTERS also have tipping feature and angle of moldboard can be changed up to 25° in either direction... SPECIFY Gar Wood dozers on your new Allis-Chalmers tractors for the finest in perfectly matched equipment!

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...Only Gar Wood makes both Dozers with all hydraulic equipment self-contained in a streamlined, front-mounted "package" available in Tipdozers and Dozercasters for all Allis-Chalmers tractors.

GAR WOOD INDUSTRIES, INC.
Findlay Division • Executive Offices • Wayne, Michigan



R-337

Divided Expressway On Caliche Subbase

(Continued from preceding page)

it out in thin lifts and drifted it across the highway. A heavily ballasted Timco pneumatic roller behind a DW10 and another Timco roller behind a Case tractor, then did the compacting. These rollers worked closely with the motor graders until the material was all laid and rolled down tight. Final tight-blading and even slush-rolling with plenty of water was sometimes done to leave a smooth surface.

During base and asphaltic-concrete surface operations, the traffic was handled on the west end over the old pavement. On the east end of the city, the old pavement was torn out and rehabilitated with the construction of the new highway. The finished base is expected to be



A Schonrock trailer, pulled by a White truck, dumps 10 cubic yards or 30,000 pounds of caliche on the highway base. Ray Day Photo

every bit as strong as the old one which has given such a good account of itself.

Personnel

For the Texas Highway Depart-

ment, the job was under the general supervision of D. C. Greer, State Highway Engineer, with R. L. Faltinson as District Engineer, and A. W. Pope as Resident Engineer. Pope, incidentally, supervised construction on the old highway over 20 years ago, so he knew what went into it.

Collins' operations were under the supervision of Contractor Bryant M. Collins, with W. H. Clem as General Superintendent.

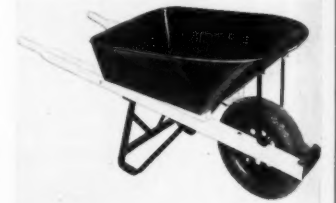
S. L. Briley, as General Superintendent, headed up the one subcontracting organization on the project. His firm, Petty Construction Co. of El Paso, had all the concrete curb and gutter work connected with dividing islands and curbs. Although this was a small operation, it was well organized, with about 1,400 feet of 12 and 6-inch Heltzel steel forms available. Concrete was furnished in truck mixers by West Texas Sand & Concrete Co. of

Odessa. This work moved along at about 1,000 feet per shift. Since the curb and gutter work had to be done with and after the base installation, it was an important part of the project.

Travelers on U. S. 80 have another improved highway on their maps.

Improved Leg Design For Wheelbarrow Line

New leg design for its wheelbarrows is announced by the Champion Wheelbarrow Co., P. O. Box 138, Byron Center, Mich. The legs angle outward from the handle members, increasing the width of the footing by 4 inches. This redistributes the



center of gravity, decreasing the possibility of tipping. A braced horizontal strut has also been added between the legs, which further stabilizes the construction and allows for resting the barrow on planking or scaffolding.

The company's line now includes 12 barrows ranging in size from the 3-cubic-foot 300 HG, through the large 475 CR which has a 5-cubic-foot capacity.

For further information write to the company, or use the Request card that is bound in at page 18. Circle No. 469.

Rust Scholarship at Lehigh

A scholarship fund at Lehigh University has been established by The Rust Engineering Co., Pittsburgh, Pa., with a gift of \$25,000. It will be used for one or more students in engineering who will be selected on the basis of "financial need, character and well-adjusted personality, intelligence, and above-average potential." The scholarship, known as The Rust Engineering Company Fund, is to honor the memory of two co-founders of the company, E. M. Rust and E. J. Lee Rust. The company stated that it recognizes "the urgent need of business and industry and particularly the industrial-construction industry for broadly trained engineers from which it can draw its professional, administrative, and executive personnel", and "that this need can be met best through higher education as taught in private schools of broad cultural background and with modern technical facilities such as Lehigh University."



The rope won't suffer long. First the stretch, then the "bang" as it breaks. Tough on the rope—but it gives us vital information!

Check and test... check and test

In the making of Bethlehem wire rope, quality control is a fundamental point. It is a factor as basic as proper design; it is the core, the heart, of our careful manufacturing methods.

Throughout this program of quality control, many different tests are employed, for no single test will suffice. The one shown here is an excellent example—one that is cruel to the rope but that yields vital facts.

Offhand, you wouldn't think that any machine could possibly break that big, stout Bethlehem rope. It is made of tremendously strong steel wires, and it will

lift or support many tons. Yet the machine pictured can break the rope in a matter of seconds. Object: to establish the ultimate tensile strength of the rope.

This rigorous treatment is all part of our overall formula. From open hearth to finished rope, it's check and test, check and test. Nothing is left to chance. Because of this attention to detail, you can depend upon Bethlehem rope to do the job expected.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation, Export Distributor: Bethlehem Steel Export Corporation

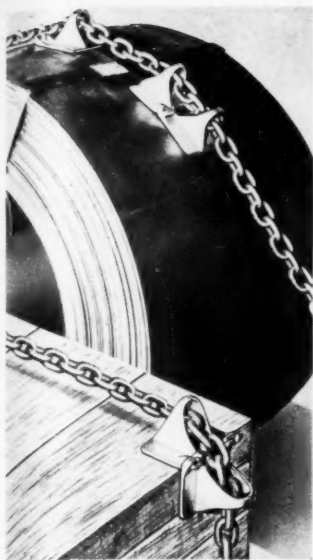
When you think WIRE ROPE

... think BETHLEHEM



Invest In
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BONDS**
Now Even Better

CONTRACTORS AND ENGINEERS



Device Saves Load From Cable Damage

A new device, through which load-anchoring chains or cables may be threaded to prevent contact damage to the load, is made by Canton Mfg. Co., 2408 13th St. N. E., Canton, Ohio. The Hinge-Guard prevents any chain or cable contact with the load, according to the manufacturer. It therefore allows increased chain tension, making loads more compact and less likely to shift.

The complete unit consists of two hinge-locked pieces which may be placed at any angle from 90 to 180 degrees. The pieces separate and may be used singly. They accommodate chain or cable up to 1/2 inch.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 415.

Computer Figures Bills, Estimates, and Payrolls

A booklet especially for contractors on the use of the printing calculator for estimating, figuring costs, payroll computations, insurance records, extension of bills, and tax computations is available from Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y. The printing calculator combines short-cut multiplication and automatic division with high-speed listing, addition, and subtraction, and gives printed proof of every factor on tape.

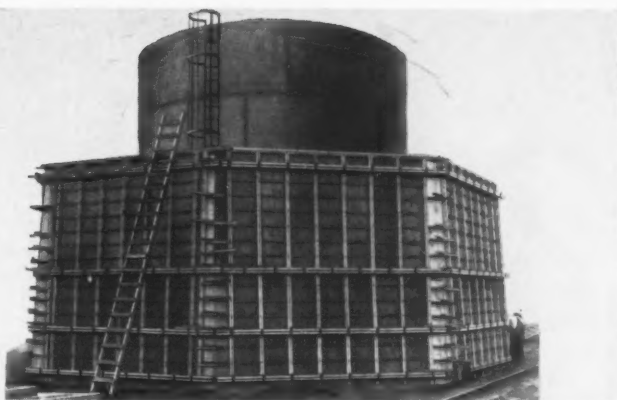
Wrong calculations, figures copied incorrectly, or a decimal misplaced can be serious in estimating. The booklet illustrates a typical estimating problem and shows how the printed record of the calculation can be checked. An earnings statement and payroll check can be made out on a wide-carriage machine. All computations and deductions are printed as they are calculated and again provide a record.

Another application for the contractor is for checking invoices to prove costs. The calculator speeds up the lengthy hand-figuring job. Five single-sheet application flyers explaining various construction engineering and other figure-work procedures are also available with this folder.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 507.

Land-Acquisition Bulletin

"Land Acquisition and Control of Adjacent Area," 1952—Bulletin 55—has been published by the Highway Research Board. Presented at the 31st Annual Meeting of the Board last year, the contents of the book contain the latest developments in the field with which the committee concerns itself. Included are new laws, judicial decisions, administrative regulations promulgated by state and local units, and a progress report of the committee project, "Reservation of Highway Right-of-Way Prior to Acquisition". Final reports on the Minnesota and Michigan Roadside surveys are reproduced in full, as well as a paper on roadside zoning. The 56-page bulletin is available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C., for 90 cents per copy.

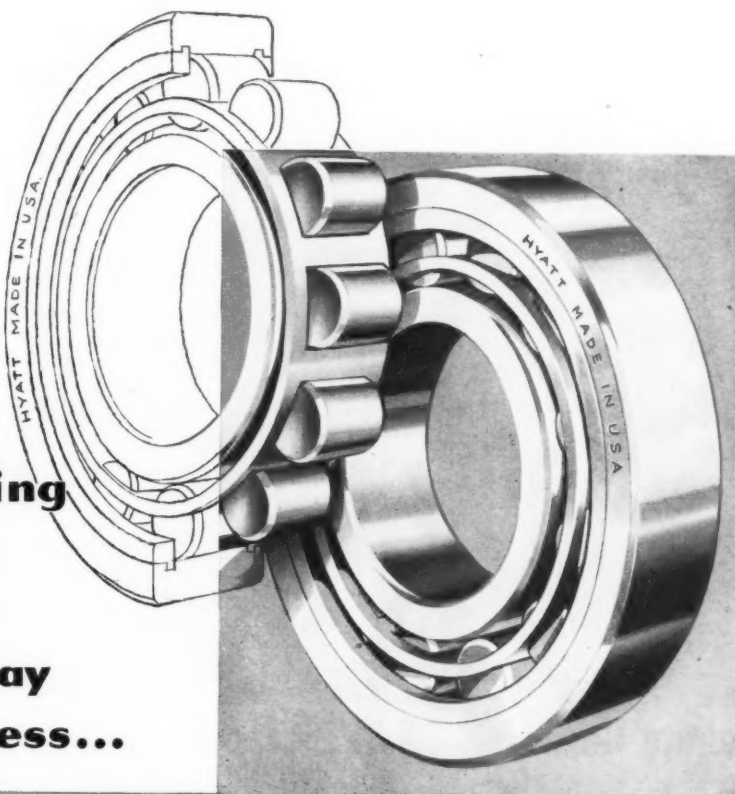


Hexagonal Tank for Chicago, Milwaukee Railroad, Ragnar-Benson, Chicago, General Contractor

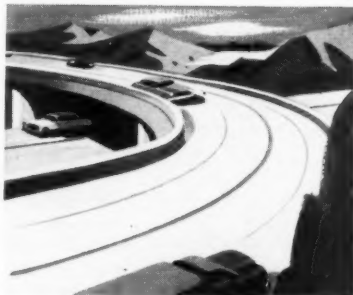
Symons Forms for Battered Hexagonal Tanks

For a battered hexagonal tank different size ties are used at each elevation to contain the changing wall thickness. Standard 135° forms are used at inside corners. Special batter forms are used opposite the 135° forms at outside corners. These special batter forms are built on the job and are secured to standard panels with standard hardware.

Send plans for your next job and get complete layout and cost sheet—no obligation. Symons Clamp & Mfg. Co., 4251-B3 Diversey Avenue, Chicago 39, Illinois.



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pace
with
highway
progress...**



Hyatt precision bearings

Where the job is BIG, you'll find Hyatt bearings . . . and in the heavy equipment that does the big job of building and maintaining our highways, Hyatts have been proved by performance. Construction crews are building better roads in less time than ever before—with modern, Hyatt-equipped machinery. Manufacturers of tractors, trucks, power-shovels, graders, rollers and other construction equipment prefer Hyatt bearings because they last longer in heavy-duty operations. When you purchase new equipment, check the bearing specifications. If they call for Hyatts, you are investing in lower costs and higher profits. Hyatt Bearings Division, General Motors Corp., Harrison, N. J.

HYATT

ROLLER BEARINGS



Safety-Helmet Liner

A new winter liner for wear under safety helmets in cold weather has been announced by the Industrial Products Co., 2855 N. Fourth St., Philadelphia 33, Pa. It is made of soft closely woven woolen material, fits snugly over the head, neck and

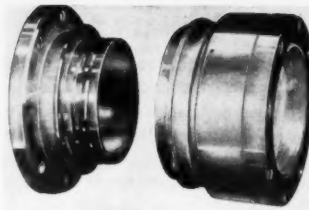
ears, and has tape ties for fastening under the chin. The liner is worn separately, and does not attach to the helmet.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 416.

Pipeline Coupler

A new coupler that is connected by sliding a sleeve over the coupler is manufactured by Snap-Tite, Inc., Union City, Pa. The Snap-Tite has standard flanged connections. A valve automatically shuts off the liquid flow when the male part or nipple is removed. (The coupler also comes without a valve.) It is made from steel, bronze, etc.

Couplers are made in sizes from 1/4 inch to 8 inches. In sizes up to 3 inches inclusive, they have screwed fittings, male or female, and over



The package of cigarettes gives an idea of the Snap-Tite's size.

3 inches screwed or flanged fittings. All couplers swivel 360 degrees, eliminating hose kinks. According to the manufacturer, the coupler works equally well whether the material to be moved is liquid, air, or gas.

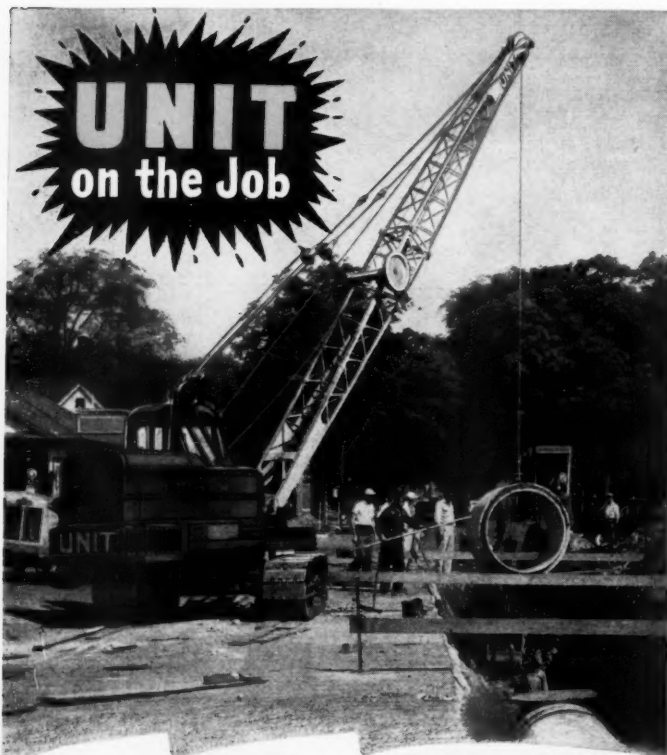
For further information write to

the company, or use the Request Card at page 18. Circle No. 450.

Aluminum-Bound Level

A new 48-inch aluminum-bound masons' wood level is offered by The Columbian Vise & Mfg. Co., 9023 Bessemer Ave., Cleveland 4, Ohio. The Aluminedge has four plumb and two level vials. It is made of California sugar pine. The manufacturer stresses that metallic-sealed vials used in place of conventional glass-drawn tips reduce level breakage and failure. Vials are enclosed in a new plastic ring which gives further protection against breakage, and maximum light reflection for reading.

For further information write to the company or use the Request Card that is bound in at page 18. Circle No. 464.



UNIT on the Job

Accurate Handling... SAVES TIME

This sturdy UNIT Crawler Crane offers plenty of power plus accurate control. Spots heavy sewer pipe perfectly into the desired position. Adjustable Hook Rollers, Extra Long Crawlers and Wide Multiple Hinged Crawler Shoes provide all-around stability. Full Circle Swing, controlled from within UNIT'S FULL VISION CAB, provides safe and efficient operation. The operator has a complete view of the entire job at all times. GET THE FACTS! Investigate this modern UNIT and its many features. Write today for literature.

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• Those big stones won't slip from the Wellman Stone Grab. Four-part closing cable reeving develops tremendous closing force on stones. Model shown has 5-ton capacity, 4 1/2 foot jaw spread. Other capacities available.

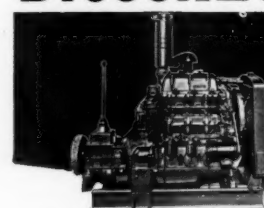
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See your P & H Diesel dealer or write to us for literature.

Highway Maintenance Bid by Contractors

New Mexico Is Latest State to Adopt Contract Method
For Trial Rehabilitation of State Highways

• NEAR Monument, N. Mex., a contractor finished a 51-mile highway job last summer in less than half his contract time. On U. S. 70 west of Roswell—in fact, all the way to Tularosa—another contractor moved along like a house afire on an 88.6-mile project.

These big-mileage projects represent something new in New Mexico; something the State tried for the first time on a major scale—highway maintenance by contract. And it worked fine on the very first contracts.

"We have experienced contractors. They're fine to work with. And they're delivering speed and economy; two things you don't often find together." So say most officials you talk to in the New Mexico State Highway Commission.

The trial contracts got under way in District 2, headquartered at Roswell, in the southeast part of the state. They covered a variety of terrain. Monument is far down in the southeast plains country, where caliche is the principal road-building material. The 88.6-mile Roswell-Tularosa job passes through everything from rangeland to heavy pine-timber country.

Conditions Favored Contracts

Several conditions favored the contract method from the start. The regular highway-maintenance crew had all it could do on routine work, and the contracts were definitely of the maintenance-betterment type. They covered long stretches of highway with virtually typical construction conditions. And the betterment program tied in intimately with some of the work previously done by regular maintenance men, such as the production of crushed rock for upper decking and asphalt seal coat. All of the highways under consideration were asphalt, and all the mileage showed about the same amount of wear and deterioration.

District 2 has 2,500 miles of main highway to maintain, and 1952 seemed the year to catch up with some of the work.

Contract Selling

The first contract for the 51-mile section on State Highway 8 in the vicinity of Monument and Loving-

ton, was done by the firm of Wheeler & Trotz for \$57,000. This contract included the installation of a heavy seal coat amounting almost to a "half-sole job", using State-furnished aggregates, with the contractor furnishing all the asphalt, equipment, and labor.

This was an especially interesting job, both from the standpoint of contract maintenance and because a



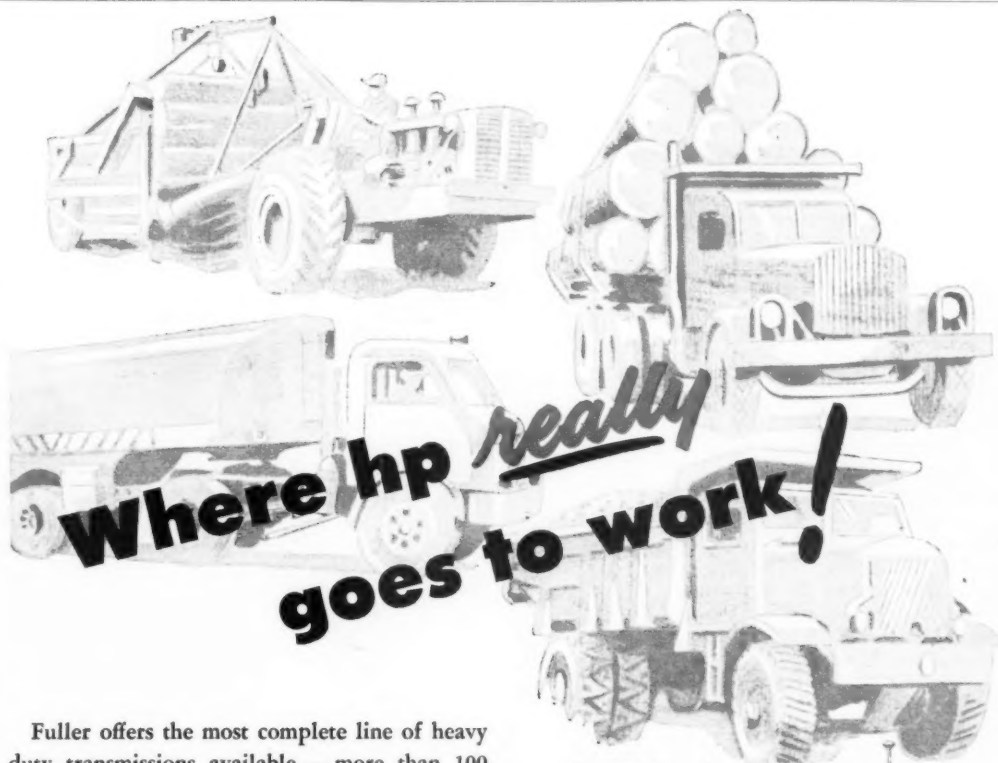
Contract maintenance in New Mexico takes advantage of the contractor's ownership of such modern equipment as this Etnyre distributor and Buckeye spreader. A motor grader with broom and a roller follow behind.
Ray Day Photo

new method of precoating caliche aggregates was employed.

Last year saw the first attempt to precoat with asphalt. Aggregate had been sprinkled with water without success in the past. State maintenance men had even tried washing these aggregates, only to find that when

the particles dried a man could still rub dust off the material. In an effort to establish some kind of a dust palliative to make the caliche more workable, they rigged up a Hetherington & Berner Moto-Paver with a special hopper, and a conveyor belt

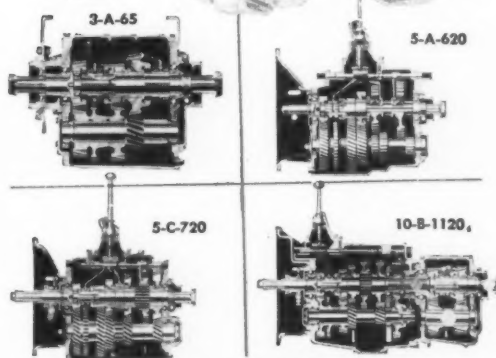
(Continued on next page)



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There's a Fuller unit or auxiliary transmission for any application—from two tons to the biggest—to provide exactly the *right gear ratios* for your job—to help your driver keep the engine turning at its most effective speed... to assure faster trips—higher average speeds.

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FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO 13F, MICHIGAN

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CONTRACTORS AND ENGINEERS
470 Fourth Ave., New York 16, N.Y.



An Adam Black Top Paver takes hot-mix from a Chevrolet truck and distributes it in a wedge leveling course to correct the old parabolic crown which had become dangerous to heavy trucks.

Ray Day Photo

Highway Maintenance Bid by Contractors

(Continued from preceding page)

for discharging mixed material. Through this machine they passed 6 gallons of MC-O (or MC-1 cut back with kerosene approximately to MC-O) with every cubic yard of aggregate.

They had already found that when this precoated rock was used on seal-coat work, it would bed much better, would use less heavy-bedding asphalt, and would absorb much less of the heavier oil. In addition, it stayed on better, even under high-speed traffic, without raveling out. The Wheeler & Trotz job was set up around these conditions, with regular state maintenance forces producing the aggregates in their portable Cedarapids plant and precoating the stockpiles in their special Hetherington & Berner adaptation.

Working rapidly to keep ahead of Wheeler & Trotz' crews, the state men passed each stockpile through the machine. Hot oil was trucked in from Big Spring, Texas. The only other machine around the Hetherington & Berner was a small D6-mounted dozer, which fed the plant and moved back occasionally to level down the pile at the end of the conveyor.

Costs on this preliminary work by state forces amounted to approximately \$2.00 per cubic yard for crushing and stockpiling the aggregates, and another \$1.00 per cubic yard for precoating them with MC-O. Production was good. Several days the crew coated 800 cubic yards in 8 hours. The material was crushed to meet a general 1/2-inch-minus specification, with 100 per cent passing the 1/2-inch mesh and from zero to 5 per cent passing the No. 10.

Wheeler & Trotz is a well established experienced road-building firm which has done many a mile of New Mexico highway building, and in its yard it had all the equipment it needed to lay the material. Orders were placed with the Cosden refinery at Big Spring, Texas, for delivery of the 120 to 150-penetration bedding cement, and the necessary equipment was moved out to the job.

The entire 51 miles was true so far as grade was concerned, but the 2-lane 22-foot highway had developed general oxidation and cracking throughout the old road-mixed oil mat. The surface was swept ahead by a power broom.

When the 275-degree asphaltic cement arrived in trucks from Big Spring, it was transferred to a 2,500-

gallon Rosco asphalt distributor, which applied it half width at a rate of from 0.2 to 0.25 gallon per square yard depending on the degree of oxidation and cracking. Following



A Minneapolis-Moline tractor pulls a Timco rubber-tire roller to compact the leveling course material. Pneumatic rolling is sandwiched between two steel wheel rollings.

Ray Day Photo

closely came a Buckeye spreader box, attached to the rear of dump trucks hauling from the stockpiles. It spread the precoated chips at the rate of 35 pounds per square yard.

At first glance, it seemed that too many chips were being applied. Vet-

eran road-building men looked at the thick chip mat, shook their heads, and grunted something about, "nobody but a damn fool would try to make a 3/4-inch penetration mat with 1/2-inch rock."

But the precoating had done some-

ONE, TWO, THREE

WITH

Yes, only three quick, easy steps required to set an Acrow Shore. Acrow flat type head fits any size stringer. No redesigning of formwork is necessary.

When it comes to stripping, Acrow is faster, too. Just a twist of the collar and Acrow Shores are down, ready to be telescoped compactly. Collar threads are cleaned automatically during the stripping operation through Acrow's exclusive self-cleaning feature.

Acrow Shores are available with standard head 6" x 6"; beam type, 14" x 4"; or J head 14" x 4". Working ranges . . . 3' 4" to 12'.

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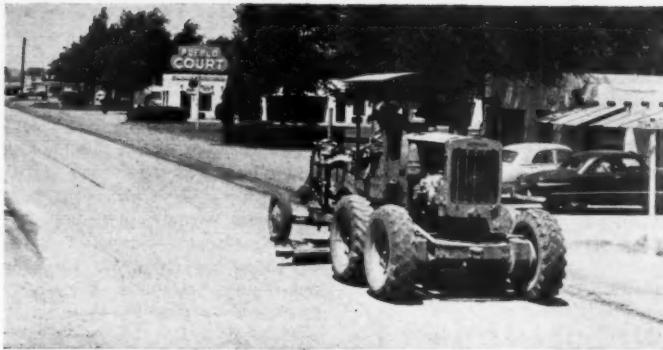


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thing new. A preliminary pass by an 8-ton steel-wheel roller bedded the rock down. Then a maintenance broom came by to level the remaining material slightly. A small rubber-tire tractor moved in with a heavy Grace pneumatic roller, and when it finished the men could see the asphalt moving up to grip the upper chips. A second rolling by a steel-wheel finished the bedding, and the strip was turned over to traffic almost immediately. Studies were made all through this work, but nowhere a week later could a broom sweep up as much as a hatful of loose material. It had all bedded perfectly, and actual tests cut out with sharp instruments proved that the armor or sealcoat was $\frac{3}{4}$ -inch thick. For all practical purposes, a light half-sole had been put on.

This job was completed in about half the allowable contract time of 120 days, and the finished work is in



A Caterpillar No. 11 motor grader, with a wire broom attached to the blade mold-board, levels a fresh application of sealcoat chips.

every sense a smooth durable piece of work. Quite a few of the men connected with this job believe that the precoating of the caliche aggregate will so fill it with good oil that the contract job will oxidize less rapidly. They believe it will have several

more good years of life in addition to the usual 5 years of the asphalt highways in this state. In speaking of "asphalt highways", we mean the road-mixed low-type mat. New Mexico is also building modern 4-lane divided expressways on the

main-stem system, and these are of asphaltic concrete. They are expected to last considerably longer than 5 years.

The interesting thing about this job is the final analysis of what happened to the precoated aggregate. Ordinarily it takes at least 0.3 to 0.35 gallons of 120 to 150 asphaltic cement to hold 25 pounds of uncoated caliche chips. By precoating, only 0.2 to 0.25 gallon held 35 pounds. The investment in light oil was well worth while, and paid off in heavier asphaltic cement saved. Throughout the entire caliche belt of southeast New Mexico and Texas, this work is of interest to both highway engineers and contractors.

The 88.6-Mile Contract

An entirely different problem is presented on the Roswell-Tularosa section, especially on a 16-mile stretch going up a mountain grade near Hondo. The Roswell contracting firm of Armstrong & Armstrong, well known in the highway construction business, contracted the 88.6-mile job for a price of \$206,000.

The job, however, is more than a seal coat. Some 16 miles in the Hondo section were built to the popular parabolic-crown 20-foot standard of a decade or more ago. Over this entire 16-mile section a special leveling course is being put down at the rate of 300 tons per mile. The remainder of the work is seal coat, the State supplying the chips and Armstrong & Armstrong furnishing the asphalt, labor, and equipment.

The job had been set up originally for the contractor to blade-mix the leveling course in place, and then to lay it down at a feather edge on the center line to an average thickness of about 3 inches at the pavement edge. Parabolic crowns have a way of dropping off sharply at the shoulder lines, and this road was so dangerous in that regard that the drivers of heavy-transport trucks were hard pressed to hold their vehicles on the road in passing. Ordinarily they drove down the center of the highway to escape the pull of the parabolic crown. So the contract was set up in this dangerous section to place a leveling course which would correct the condition, and then, along with the rest of the job, to seal and cover it with chips.

Contractor officials studied the problem of blade-mixing this material on the long grades and came up with an astounding alternate. For the same price, they suggested that the material be plant-mixed in their Standard commercial hot plant in Roswell, hauled out to the site, and spread by an Adnun Black Top Paver. Naturally this idea would give a better job, eliminate much of the traffic hazard, and be likely to result in faster progress. The suggestion was gratefully accepted, and it did much to give the contract-maintenance idea a good sendoff. From Armstrong & Armstrong's point of view, they put the material out of the Roswell plant at about the same cost, made better progress, and had better control of the traffic they had to maintain through the job. And the mix was one using 120 to 150 asphaltic cement, instead of the MC-3 originally planned for the motor graders.

(Continued on next page)

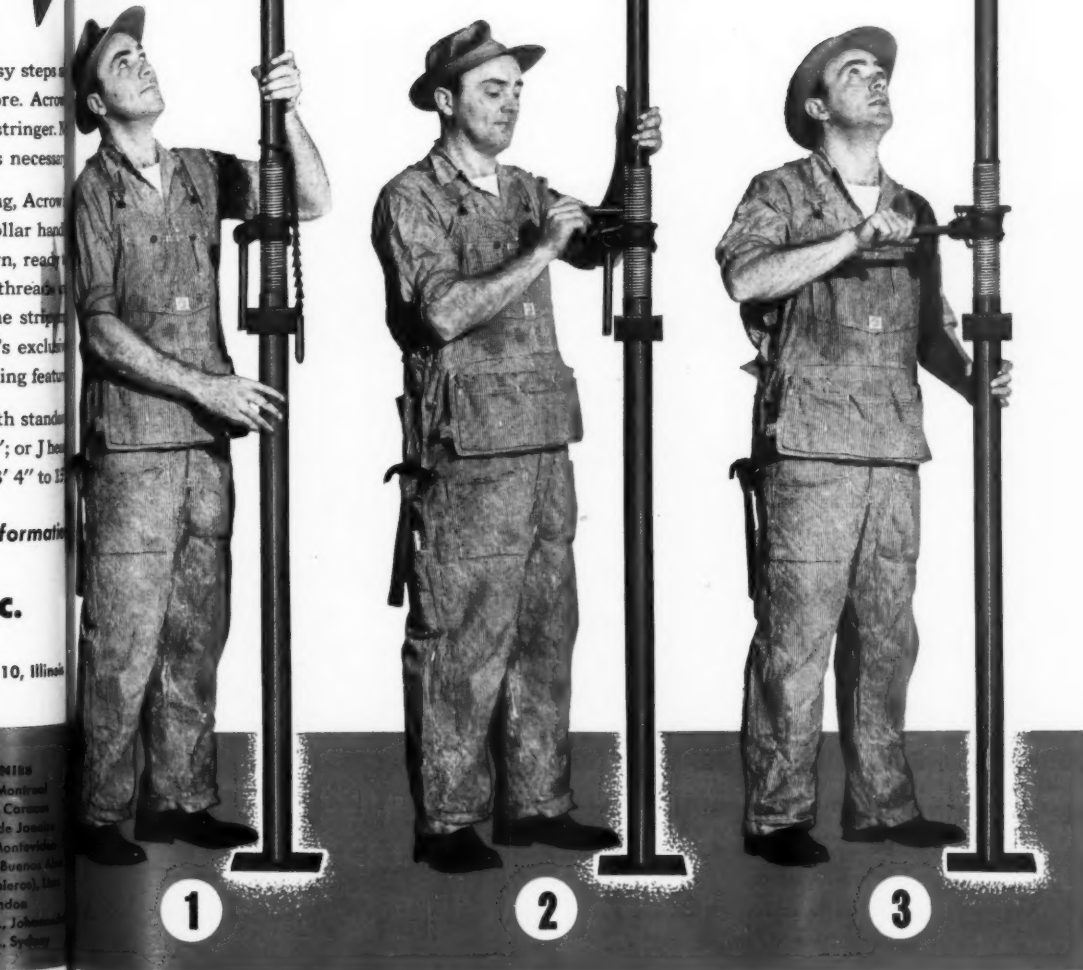
ACROW and they're UP

ADJUSTABLE STEEL SHORES

1 Lift inner
to approximate
height desired.

2 Insert Pin
in nearest hole.

3 Turn collar
handle for final
accurate adjustment



Highway Maintenance Bid by Contractors

(Continued from preceding page)

Specifications for the leveling-course mix were as follows:

Size Screen	Per Cent Passing
3/4-inch	100
1/2-inch	65-100
No. 4	30-60
No. 10	20-45
No. 200	3-12
Liquid Limit: 25 or less	
Plasticity Index: 6 or less	
120-150 AC: 6 per cent.	

The leveling-course material was trucked out in a fleet of Fords and

Chevrolets, at the rate of about 14 tons per load. To receive the material, a light fog coat of about 0.1 gallon of 120 to 150 asphaltic cement was applied ahead of the laydown. The Adnun machine worked on some hills and grades which made it necessary to hook a chain on to the batch truck to help pull the grades. But even so, on a 23-mile haul out of Roswell, the crew hit 600 tons in place on their good days, and that is 2 miles of completed leveling course in anybody's language.

By employing an extra raker and using a shop-built bevel device, the

edge of the leveling course was faired off toward the highway shoulder in such a way that it had the practical effect of adding an extra foot of width to each side. The course required light raking near the center line, where it was thin. It was laid to leave a straight crown of 0.02.

Armstrong & Armstrong's seal-coat work moved rapidly, too. Aggregates for the Roswell-Tularosa job were a much harder rock and did not require precoating. The aggregates were furnished in state stockpiles at strategic locations along the line. Equipment for this work on the

Armstrong job included a 2,500-gallon Etnyre distributor, an Allis-Chalmers rubber-mounted tractor pulling a Grace power broom, a Caterpillar No. 11 carrying a stiff-wire broom on its grader moldboard, a Buckeye spreader box for chips, and a steel-wheel Ingram roller. The equipment was used in the same sequence as the manner in which the other contract was done.

Construction Department Directs

The first two maintenance contracts were supervised by the Construction Engineer's Department

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OKLAHOMA—Oklahoma City

DIESEL POWER COMPANY

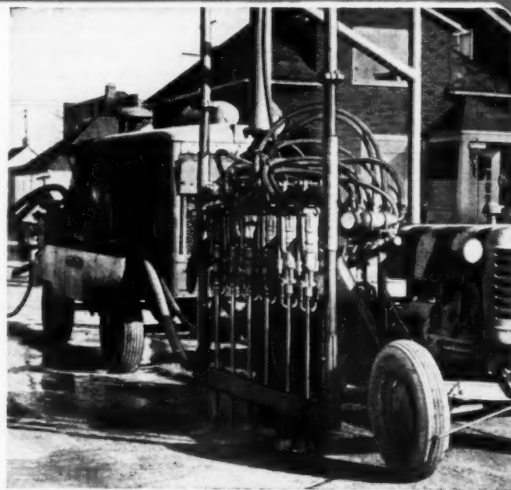
GM DIESEL

CASE HISTORY No. 5211-4

USER: R.L. Coolsaet Construction Co., Dearborn, Mich.

INSTALLATION: GM Diesel-powered Ingersoll-Rand 600 cfm rotary compressor replacing a 500 cfm compressor, supplies air to a tractor-mounted multiple drill—six drills 12" apart.

PERFORMANCE: Previous Diesel compressor supplied 75 lbs. of air to each drill and took time to build up pressure after each move. GM-powered compressor supplies steady 95 lbs., starts drills immediately and saves 20% in fuel costs. Unit drills 600 lineal ft. per day.



NEW GM DIESEL-POWERED RIG CUTS PAVEMENT-BREAKING TIME IN HALF

R. L. Coolsaet figures his pavement-breaking time is cut right in half with this rig when compared to the old way with one man on each drill. Now he drills six holes at once—gets twelve holes drilled in six feet and moves up for the next series, all in three minutes, and one operator handles the job.

This is another good example of how General Motors Diesel-powered equipment gets work done faster and reduces costs at the same time. Two-cycle operation

delivers a smoother, steadier flow of power—gives instant response to overcome sudden load changes. Simple design makes it easier to maintain—lower-cost parts make it cheaper to maintain. Add it up and you'll see why GM Diesels give you power at the lowest cost per horsepower hour—for any job.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
SINGLE ENGINES . . . 16 to 275 H.P. MULTIPLE UNITS . . . Up to 840 H.P.



It pays to standardize on

Write for booklet "A 50,000,000 Horsepower Insurance Policy" that tells you why.

OREGON—Portland 9
GUNDERSON BROS. ENGINEERING CORP.

PENNSYLVANIA—Philadelphia 31

FRANTZ EQUIPMENT COMPANY

Pittsburgh 4

HIGHWAY EQUIPMENT CO.

Wilkes-Barre

STANDARD EQUIPMENT CO.

SOUTH CAROLINA—W. Columbia

VAN LOTT, INC.

SOUTH DAKOTA—Sioux Falls

SILOX ROAD EQUIPMENT, INC.

TENNESSEE—Chattanooga 1

NIXON MACHINERY & SUPPLY CO., INC.

Memphis 2

LEWIS-DIESEL ENGINE CO.

TEXAS—Houston

STEWART & STEVENSON SERVICES INC.

El Paso

EQUIPMENT SUPPLY CO., INC.

Plainview

DIESEL POWER, INC.

UTAH—Salt Lake City 4

CATE EQUIPMENT CO., INC.

VERMONT—Barre

HILL-MARTIN CORPORATION

VIRGINIA—Richmond 22

BEISS EQUIPMENT CORP.

WASHINGTON—Seattle 9

EVANS ENGINE & EQUIPMENT CO., INC.

Seattle 4

YUKON EQUIPMENT CO., INC. (ALASKA)

Spokane

MODERN MACHINERY CO., INC.

WISCONSIN—Milwaukee 8

DROTT TRACTOR CO., INC.

WYOMING—Casper

THE COLORADO BUILDERS' SUPPLY CO.

(Equip. Div.)

CONTRACTORS AND ENGINEERS

2,500.
Allis-
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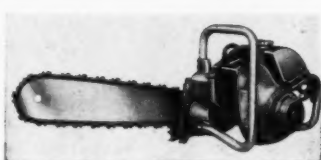
from Santa Fe, in line with a general policy to direct all contract work from the state capital headquarters. Plans and specifications were also drawn up at Santa Fe. A representative from the construction office directed field inspection. Field relations, it might be added, were extremely harmonious. Both contractors were happy, and the state men were delighted to see this badly needed maintenance work going down rapidly.

The Roswell-Tularosa highway draws considerable traffic, so a general program of widening timber bridges from 20 to 28 feet was also undertaken. This work was done by a special bridge gang in the Maintenance Department. There is one large concrete and steel bridge on this highway which also has to be widened, and it will be a contract job.

Personnel

Credit goes to the district forces for development of the program. Projects were designed and preliminary trials run in the district prior to asking for work to be let to contract. The program was set up by Ira B. Miller as District Engineer and C. O. Erwin, State Highway Engineer, as Chief of Maintenance. Other officials connected with the experimental-contract maintenance were: T. B. White, Construction Engineer; J. A. Byrd, District Engineer at Roswell; John Fairly, Construction Engineer in the field; and S. S. Willis, who heads the routine state maintenance patrols as Maintenance Superintendent. Leonard Clayton, District Shop Foreman, designed the alteration on the H&B mixer which made precasting possible. Armstrong & Armstrong's contract was directed by T. G. Moore, with Bob Dever as Project Superintendent.

New Mexico's first trial runs with maintenance by the contract system brought enthusiastic comments from the contractors, the engineers, and the motoring public. It is likely that this state, with high asphalt mileage, will do more in the future.



A 20-Inch Chain Saw

A new 20-inch chain saw which is said to feature a fast-cutting chain and increased motor power is announced by the Lombard Governor Corp., Ashland, Mass.

The Model 3 class of Woodlot Wonder chain saws contains 16-inch, 20-inch, and bow saws. They are light in weight and easy to handle, the company reports.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 535.

Folder on Belt Conveyor

A folder on a portable belt conveyor is available from the Atlas Conveyor Co., Clintonville, Wis. Model 125 is 42 feet long, has a 24-inch belt, a Wisconsin engine and is mounted on a raising-arm truck with pneumatic-tired wheels. Maximum discharge height is 19 feet at an incline of 25 degrees. Other belts available range from 25 to 60 feet in length.

The conveyors handle crushed stone, sand, gravel, wet concrete, and other abrasive or nonabrasive materials.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 487.

BRAB Surveys Navy Buildings

A survey of temporary and semi-permanent buildings built on naval establishments in World War II is being undertaken by the Building Research Advisory Board under a contract between the Navy Bureau of Yards and Docks and the National Academy of Science. Its purpose is to assist the Bureau in establishing new standards for temporary construction in present and future build-

ing programs. Emphasis is being placed on the examination of design, construction, materials, details, and other pertinent engineering features. The survey also includes a study of site improvements, utilities, and fire protection insofar as these facilities

affect the performance of buildings within a complete Navy installation. Thus far, the study is limited to facilities in the Fifth Naval District. BRAB and the Bureau of Yards and Docks, however, may agree that an extension is warranted later on.

ON TO THE NEXT JOB in less than two minutes... with MILLER Tilt-Top!



MILLER "B" 10 ton shown above loading D-4 tractor

Time saved between jobs means more profit on every job. One man can load heavy units in less than two minutes. Operator drives unit on platform—it tilts, locks... and he's on his way with no lost motion. You'll find MILLER Tilt-Top the extra trailer for extra production.

MILLER Tilt-Top saves even more time than other more cumbersome trailers with its better maneuverability, and easier backing. Best of all, MILLER'S exclusive mass production of Tilt-Top trailers cuts original cost for you. Get this extra help... extra production now—see your MILLER dealer today!

MILLER  **research engineers**
Trade mark reg. **TRAILERS** Dept. C-2, 456 So. 92nd Street, Milwaukee 14, Wis.

**handier
easy-to-back
priced right**

Model "B" 10 ton \$1175
Optional equipment (priced extra)
16' long platform (8'x14' standard),
hydraulic tilt control, 2 speed
hand winch and electric brakes.

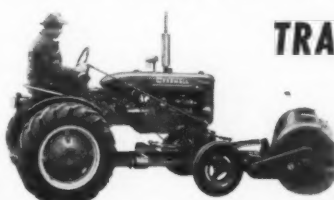
NEW ENGINE POWERED SWEEPER



A new pull type sweeper, engine driven, with many unusual, exclusive features. Main frame of 5" tubular steel, with 5" channel rear frame for rugged strength. 96" x 30" brush, on self-aligning anti-friction bearings, mounted on 3 1/2" tubular frame. Exclusive spring balance permits brush to float over uneven surfaces. Hydraulic control raises and lowers brush. Sweeps at 30° angle, right or left. A sprinkler can be easily attached.

A traction driven model, built along similar design is also available.

TRACTOR MOUNTED SWEEPERS



M-B tractor mounted sweepers are built for various models of Ford, Ferguson, Case and International-Har-

vester tractors. More than 25 years of sweeper experience has been built into these models. Shafts turn on anti-friction bearings and all moving parts are carefully protected. Easily installed and removed. Hydraulically controlled. Sweeps a 6' path, 30° to the right only. Brooms may be disengaged when travelling.



MEILI-BLUMBERG CORP.

NEW HOLSTEIN, WISCONSIN

Graders • Highway Markers • Tractor Accessories

"SAVED \$800 PER MILE with my new STOW SCREED!"

Performance like that is important on any paving job. It's the reason why so many contractors are now using STOW screeds on all their road paving jobs!

STOW vibrating Screeds:

1. Permit placing more than 300 cubic yards in less than 8 hours

2. Strike off and impact in one operation
3. Leave surfaces true to grade
4. Work up to and around manholes and obstructions
5. Have record of proven trouble-free performance on the job!

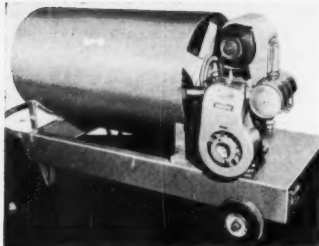
Stow screeds are available in beam sizes up to 30' long. Or, if you have, or prefer to build, your own beam, ask about the STOW Screed Package!



STOW VIBRATING
SCREEDS
STOW MANUFACTURING CO.
40 Shear St., Binghamton, N. Y.

Write today for complete information on Stow Vibrating Screeds and the Stow Concrete Vibrator line. Request Bulletin 526.





A Portable Heater

A new portable space heater that may be used where electricity is not available is announced by Quiet Automatic Oil Burner Corp., 33 Bloomfield Ave., Newark 4, N. J. It employs a small gasoline engine to drive the oil-burner motor and the blower.

The heater is made in two sizes rated at 200,000 and 400,000 Btu. No stack is needed. The burner connects to an oil drum. The small gasoline

motor is of standard make.

For further information write to the company, or use the Request Card at page 18. Circle No. 436.

Plastic-Pipe Brochure

A 16-page brochure on plastic pipe has been released by the Plastic Products Division of Triangle Conduit & Cable Co., Inc., New Brunswick, N. J.

It contains all pertinent information on the company's four types of plastic pipe: flexible, semirigid, rigid high-impact, and rigid polyvinyl chloride pipe. Detailed tables give chemical and physical characteristics of each. Also included are advantages of using plastic pipe and directions on how to install and join the pipe.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 444.



The Bell Aircraft Corp. heliport, shown here in front of the company's new plant near Fort Worth, Texas, is typical of new landing accommodations that will dot the country as rotary aircraft become more common.

Birth of Heliports

As the helicopter opens new vistas in inter-urban travel, city officials will be faced with the necessity of providing suitable landing strips, or heliports, in strategic locations. These heliports, however, are not only relatively simple and compact, but also may be built for a fraction of the cost of conventional airports.

Bell Aircraft Corp., for a recently constructed heliport, used a 200x400-foot rectangle and two hardstands equipped with sunken concrete blocks with metal rings to tie down the helicopters. This heliport adjoins the company's new helicopter engineering and manufacturing plant near Fort Worth, Texas. Wigton-

Abbott Corp., Plainfield, N. J., designer and co-builder of the Bell projects, estimates that a similar heliport might be constructed for about \$20,000, excluding the cost of hangars, control tower, and equipment.

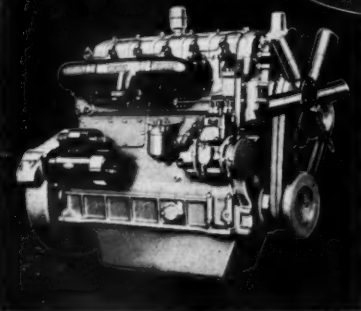
Design Engineer for Dravo

McAndrew McCall has been named Chief Design Engineer, Construction Department of the Machinery Division of the Dravo Corp., Pittsburgh, Pa., manufacturer of concrete buckets, grouting machines, and steam hoists. He was formerly Chief Engineer and General Superintendent of Compania Tecnica y Constructora in Mexico and South America.

**HOES TO
HOISTS...
CRANES TO
CRUSHERS...**

WAUKESHA
powers 'em all

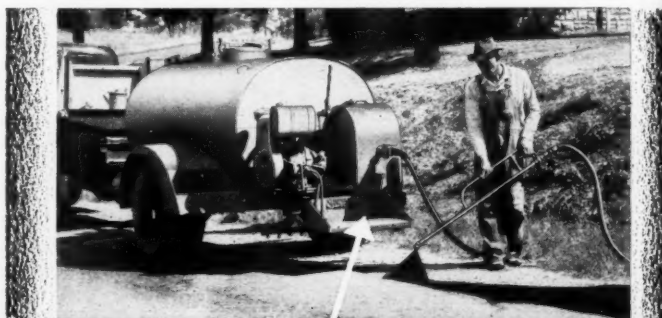
**50 to 570 Hp.
DIESEL or
GASOLINE**



135-DK8 Diesel Engine—6 cylinders, 4 1/4-in. x 5-in., 426 cu. in. displacement. Max. hp. 147 @ 2800 rpm.

● Specially adapted to general contractors' needs, Waukesha handle every load demand easily and eagerly, and with power to spare. Both the Diesels and gasoline engines are easy to start and operate. Waukesha turn out more work, steadily and speedily. Economical to fuel and maintain. 50 to 570 hp. gasoline or Diesel. Get the complete Waukesha performance story in Bulletin 1079.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
New York • Tulsa • Los Angeles



**TEAM UP THIS/STANDARD STEEL
S-J WITH A STANDARD STEEL TAR KETTLE
FOR LOW COST/ROAD MAINTENANCE!**



STANDARD STEEL TAR KETTLES

✓ You get three separate operations from Standard Steel Tar Kettles. (1) Hand operated spray assembly; (2) Motor operated, and (3) Gravity Draw off for bucket work. Uniform heat throughout mass of material eliminates "cold spots" or "burnt materials." Team up an "S-J" and a Standard Steel Tar Kettle and you can handle any repair work or secondary construction at less cost—less work—with less investment in equipment. Write for Catalog "TK".

STANDARD STEEL "S-J" for SECONDARY CONSTRUCTION

✓ Whether used for construction of playgrounds, driveways, parking areas, or for patching, sealing, shoulder repair or crack filling, Standard Steel "S-J" works fast—economically—efficiently.

SAVES WORK—a special "SUCK BACK" element cleans spray bar instantly after shutting off flow of material.

NO DELAYS STARTING—pump and entire piping system is instantly drained after completing a job—eliminating freezing and loss of time on starting next job.

SAFETY—Gravity Draw off on curb side protects operator.

Write for Catalog "S-J" for Further Details

OTHER PRODUCTS

Asphalt Pressure Distributors, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms and Aggregate Spreaders.



Standard Steel Works NORTH KANSAS CITY, MO.

CONTRACTORS AND ENGINEERS

Conveyor-Belt Repair

A new conveyor-belt fastener is available from the Flexible Steel Lacing Co., 4607 Lexington St., Chicago 44, Ill. It is hammered into the belt without pre-punched holes to guide the teeth. This is possible because the teeth are formed slightly outward instead of straight, according to the manufacturer.

The Turtle fastener comes in steel, monel, stainless, and everdur in one size. It will join belts that are 7/16- to 9/16-inch thick.

For further information write to the company, or use the Request Card at page 18. Circle No. 506.

Folder on Degreaser

A folder on a degreaser for equipment has been issued by the Stewart-Hall Chemical Corp., Mount Vernon, N. Y. Greasemaster is

sprayed or swabbed on, allowed to stand for 15 minutes and then hosed off.

Either an air gun for use with an air compressor or a hydraulic tank sprayer comes free with an initial 55-gallon order.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 494.

District Manager for DeWalt

Jack J. Rowe has been appointed District Manager of the Cleveland, Ohio, area for DeWalt, Inc., Lancaster, Pa., manufacturer of power cutting tools and subsidiary of American Machine and Foundry Co. In addition to the immediate Cleveland area, Mr. Rowe will cover the territory extending from the Pennsylvania border westward beyond Sandusky, Marion, Columbus, and Portsmouth.



Use of a new alloy, Ductilite, is said to reduce weight at vital balance points on this dozer made by the Holt Equipment Co., Independence, Oreg. For further information write to the company or use the Request Card at page 18. Circle No. 456.

Introducing —

A NEW PORTABLE GRAVEL PLANT



FEATURING THE ANDERSON DUAL-JAW CRUSHER

Outstanding features:

1. Increased production

The Dual jaw action of this crusher increases the production 50% over comparable single-jaw crushers.

2. High plant capacity

The Dual Jaw Crusher comprising a 10" x 36" primary and 5" x 36" secondary, operating in conjunction with a 24" diameter x 20" face Roller Bearing Rolls, provides 3 phases of crushing and produces a greater capacity than is found in any machine of similar size.

3. Compact design

The extremely compact design requires no supporting jacks or blocks and assures minimum weight and consequently minimum cost.

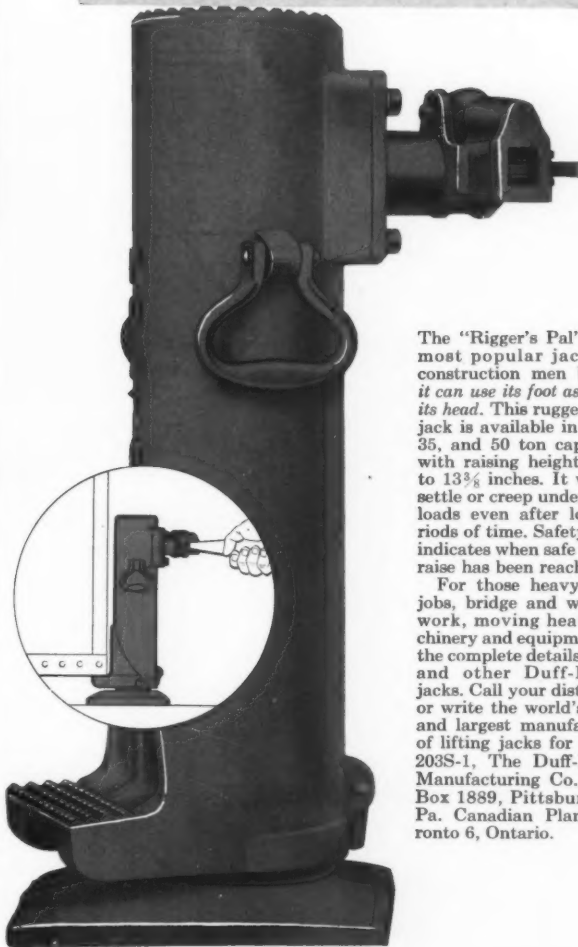
4. Self-cleaning grate bars

The feed hopper has self-cleaning grizzly bars of special design, sloped to discharge pit boulders automatically. This practically eliminates tiresome hand labor. Only one man is required for adequate operation under all conditions.

Capacity—Approximately 125 yards per hour • Write for illustrated circular

HIGHWAY MACHINERY CO.
WAUKESHA, WISCONSIN

Why the "Rigger's Pal" is the most popular jack with construction men!



The "Rigger's Pal" is the most popular jack with construction men because it can use its foot as well as its head. This rugged screw jack is available in 15, 25, 35, and 50 ton capacities, with raising heights of 10 to 13 3/4 inches. It will not settle or creep under heavy loads even after long periods of time. Safety signal indicates when safe limit of raise has been reached.

For those heavy lifting jobs, bridge and wrecking work, moving heavy machinery and equipment, get the complete details on this and other Duff-Norton jacks. Call your distributor or write the world's oldest and largest manufacturers of lifting jacks for catalog 203S-1. The Duff-Norton Manufacturing Co., P. O. Box 1889, Pittsburgh 30, Pa. Canadian Plant—Toronto 6, Ontario.

DUFF-NORTON Jacks

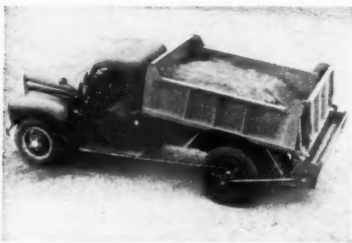
"Giving Industry A Lift Since 1883"

A folder on railroad track-walking shoes for crawler tractors is issued by the Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Oreg. The Esco shoes have flanges corresponding to those on a railroad-car wheel. These enable the tractor to run on the track like any piece of

Use Swenson self-feeding material spreaders for fast, easy application of salt, chloride, sand, cinders, gravel or a combination of these materials

Free Information

Swenson Spreader & Mfg. Co.
Lindenwood, Illinois



rolling stock, except that it is able to mount or dismount the rails without damage to the latter.

The shoes are used in such operations as track laying, roadbed grading, and railroad-car spotting, loading, and unloading.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 504.

Wage Increase Was Not Held To Be an Extra Cost

THE PROBLEM: A municipal housing-construction contract fixed a 40-hour work week. Exceptions were: emergencies; specified wage rates; and provision that payment of wages above those rates should not authorize reimbursement to the contractor. A subsequent Presidential order increased the work week to 48 hours, entailing time-and-a-half wage payments for the extra 8 hours. Was the housing authority liable to the contractor for this extra cost?

THE ANSWER: No. (*American Store Equipment & Construction Corp. v. Buffalo Municipal Housing Authority*, 111 N. Y. Supp. 2d 688, decided

by the New York Supreme Court
Erie County.)

The court noted that the housing authority was a state corporation and not a Federal agency, although receiving Federal aid.

The court also said that, although the contract in this case explicitly deprived the contractor right to reimbursement for the extra labor cost entailed by the Presidential order, the result would have been the same had there been no such clause in the contract. The mere fact that a contract had become increasingly difficult and expensive to perform, due to a law enacted after its execution, did not excuse performance.

The opinion cites decisions in suits that had been brought against the Federal government on account of increased cost of performing Federal contracts due to the same executive order or similar governmental orders. It was noted that where the Government had been held liable for increased labor cost, there had been distinct agreement on the part of the Government to reimburse for additional expenditures, or a law or order permitting reimbursement.

Paving Contractor Was Not Liable For Accident

THE PROBLEM: A motorist was fatally injured when his car struck a manhole elevated above the surface of a street that was being paved. The city had constructed the manhole, which was within a general area which the paving contractor had agreed to keep open for travel, pending paving. Was the contractor liable in damages?

THE ANSWER: No. (Gibbons v. City of San Bernardino, 238 Pac. 2d 115, decided by the California District Court of Appeal, Fourth District.)

The court said that the contractor was bound to see that the general area was in reasonably safe condition for travel, but was under no obligation for conditions produced by the city at points where the contractor was doing no work.

Payment for Irregularly Let Highway Construction

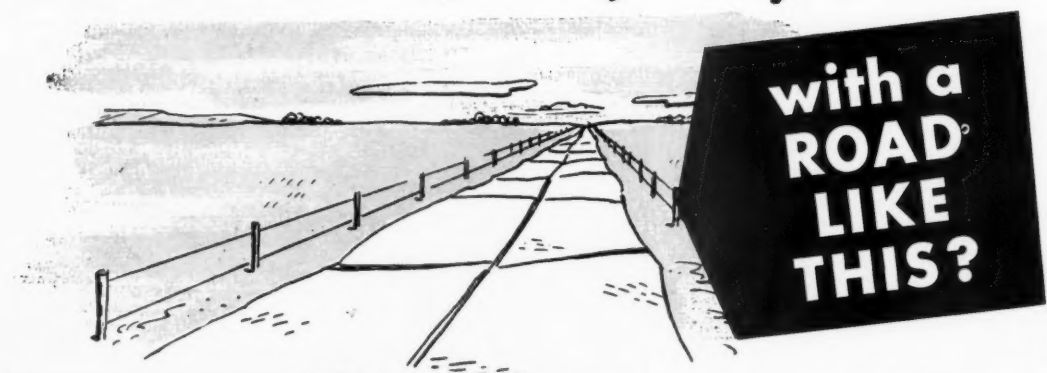
THE PROBLEM: South Dakota township roadwork was irregularly awarded by one member of the board, without written agreement or filing of specifications as required by statute. Taxpayers remained silent while the work was being done in good faith. The job was one that legally could have been let under proper procedure and there were revenues applicable to payment. Were the taxpayers entitled to an injunction against payment for the completed work?

THE ANSWER: No. (*Losee v. Het-tich*, 54 N. W. 2d 353, decided by the South Dakota Supreme Court.)

The court said that the trial court acted within its discretion in refusing to enjoin payment under the circumstances. Decisions of the Supreme Courts of Iowa and Minnesota were cited in support of the point that even though a public body may

CONTRACTORS AND ENGINEERS

What are you going to do



YOU'VE seen roads warped like this drawing! For the Highway Department it's a question of how to save it! For the Contractor it's how to do it right for the least cost.

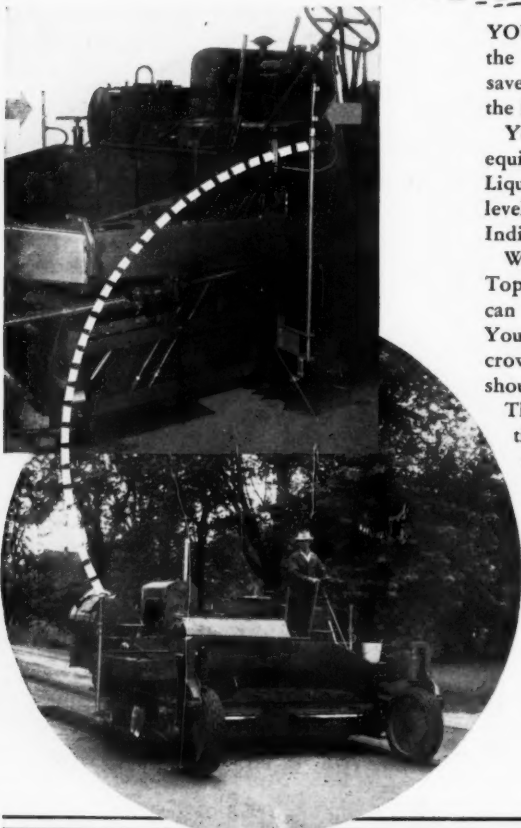
You have an answer in the Adnun Black Top Paver equipped with the Adnun Liquid Level. The Adnun Liquid Level gives you positive Visual Control of the level of your screed. It is mandatory in the state of Indiana.

With the Adnun Liquid Level and the Adnun Black Top Paver you can level up old roads perfectly. You can correct accurately for any slope at any station. You can hold a level grade and maintain the desired crown. You can rebuild shoulder and blend the shoulder into the crown.

The Adnun Liquid Level permits following fluctuations in grade, visually. Corrections can be instantaneous or gradual to hold the liquid at the desired gage setting for the desired surface and crown.

Only a Black Top Paver with a screed with a straight lift can do this. Adnuns do things other Black Top spreaders won't do. They make new roads out of old. Ask for the Booklet "Why." It brings you some new thoughts on Black Top Pavers.

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1916 STATE STREET
NUNDA, NEW YORK



ADNUN
TRADE MARK REGISTERED

BLACK TOP PAVER



have ignored statutory procedure in letting work, it would be inequitable to refuse to pay for it after it had been faithfully performed.

In this case the circumstances did not require competitive bidding, and the board had a right to have the work done. As to whether this rule would be applicable were the township entirely without power to build the road, the court expressed no opinion. In such a case as this, however, where it was within the power of the township to build the road and the township simply failed to exercise that power in the manner prescribed by statute, justice was not violated in allowing payment.

Contractor's Worker Hurt: City Was Not Responsible

THE PROBLEM: Baltimore let water-tunnel construction to a contractor, who sublet the erection of hoists and head frames to be used in excavation. The prime contract specified that the work should be under the direction of the city engineer; that all equipment must be satisfactory to him; and that the contract could be annulled for use of improper equipment. The city reserved the right to pass upon the safety of the contractor's methods in the interest of workmen's safety. Was the city liable for injury to one employee of the subcontractor, caused by negligence of another, in operating a crane in the erection of a hoist?

THE ANSWER: No. (State v. City of Baltimore, 86 Atl. 2d 618, decided by the Maryland Court of Appeals.)

The court observed, "It is true that an owner may be liable to the employees of an independent contractor for injuries arising out of the abnormally dangerous condition of the premises". But here the injury was not due to the condition of the premises or any defect in the equipment, but rather to the operator of the crane neglecting to set a safety pawl with which the crane was equipped.

The court added that the above mentioned power retained by the city was not intended to empower it to direct the contractor's employees in details of the work.

Closing of Highway Was Reasonable: No Liability

THE PROBLEM: In the construction of a road along a river, a slide blocked another highway, but there was no negligence. The contractor removed the obstruction within a reasonable time, but bus owners, who had been licensed by the State to operate the buses over the blocked highway, sustained financial loss as a result of having to make a long mileage detour until the road was opened. Could the bus owners hold the road contractor liable for such loss?

THE ANSWER: No. (Ferenc v. Booth & Flinn Co., 88 Atl. 2d 413, decided by the Pennsylvania Supreme Court.)

The court recognized that the contractor, though acting merely as agent for the State, was not exonerated from liability thereby. The court also intimated that, had the obstruction not been removed with reasonable promptness, the contractor would have been liable for as

much of the delay as was unreasonable. Decisions of Massachusetts and Washington appellate courts were cited as sustaining a statement that, although right to obstruct a public road is "extremely limited," no nuisance is created by a necessary obstruction caused in building a new road, unless such obstruction is unreasonably prolonged.

The crucial question in the case was whether the obstruction was cleared away with reasonable promptness, and the court answered that question in the affirmative. It would have been unreasonable and unconscionable to require the contractor to work around the clock to clear the slide. Testimony of a wit-

ness that clearance could have been hastened by using three shifts was worthless, because there was no proof that labor was available to man extra shifts.

Cannot Rely on Statements Made After Bid Is Accepted

THE PROBLEM: After a successful bidder had bid on an airport-paving job, the Government's representative stated that if a contract were entered into, notice to proceed would be issued in time to permit completion of the work before winter. (This was in September.) In accepting the job, the contractor expected unfavorable weather condi-

tions. Notice to proceed was not given until November 8. Was the contractor entitled to damage on the ground of misrepresentation?

THE ANSWER: No. (Dubois Construction Corp. v. United States, 98 Fed. Supp. 590, decided by the United States Court of Claims.)

The court noted that since the bid antedated the representations, there could be no reliance upon them, and that the contractor's position was further weakened by the fact that he had expected delaying bad weather.

Several decisions were cited to support the proposition that one cannot rely upon representations that are contrary to facts known to
(Concluded on next page, col. 3)



When you need that extra push, you'll be glad your machine is a P&H. With its low center of gravity, better balance and all-welded construction of rolled alloy steels — you can exert more power at the tooth point with less strain or danger of tipping. That's what gives you the added work capacity. You can prove this for yourself as many others have done. Ask to

see a P&H on a job near you. Watch it work! And while you're there, watch the mobility on true tractor-type crawlers. Note how smooth hydraulic control enables the operator to "feel" the load at all times. It's easier on both man and machine. And far easier on maintenance. You'll sell yourself on P&H in a hurry.

P&H POWER SHOVEL AND CRANE DIVISION

HARNISCHFEGER CORPORATION
MILWAUKEE 46, WISCONSIN

See your **P&H** Dealer!

Lectures on Corrosion

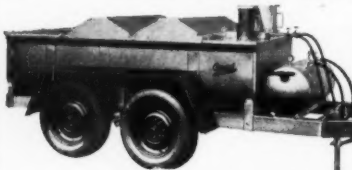
A series of 10 lectures for engineers will be given at Stevens Institute of Technology, Hoboken, N. J., beginning on February 12. The subject is "Prevention of Corrosion" and

the lectures will take place on Thursday at 7:15 p.m.

Topics include: iron, copper, nickel, and their alloys; stainless alloys; cathodic protection; inhibitors; metal coatings; paints and inorganic coatings; plastics and rubber.

Aeroll JUMBO SIZE "HEET-MASTERS"

NEW MODELS — 375- and 500-GALLON CAPACITY



Combining all the features of the famous "Heet-Master" internal tube heated kettles, the "Jumbo" is built for fast, hard trailing — anywhere you can drive a truck. A double tube system (patented) insures "hot stuff" a few moments after the burner is started in quantities ample for those big jobs. Also can be equipped with power, or hand spray as an integral part of the unit. Write for literature.

AEROIL PRODUCTS COMPANY, INC.

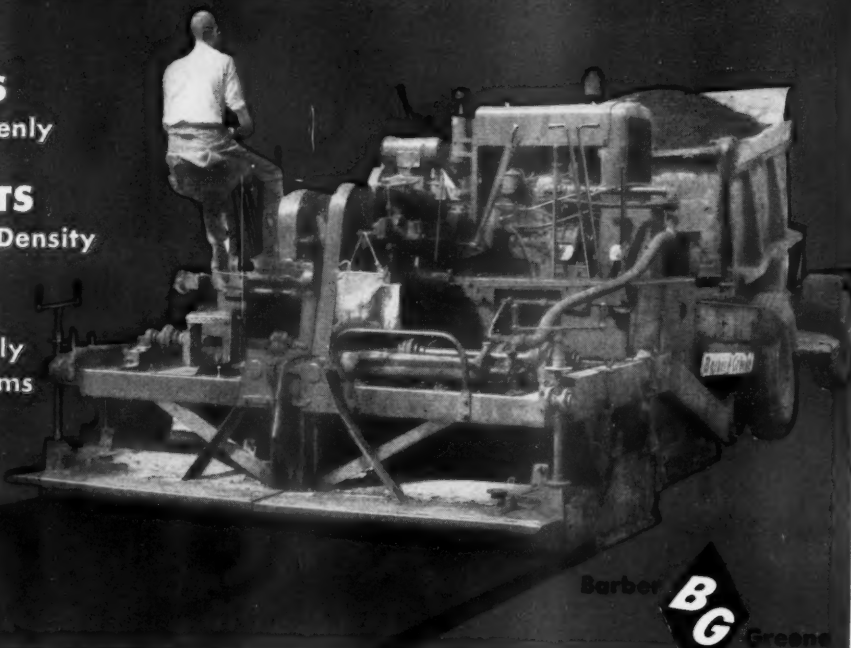
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"MAGIC-CARPET" MAKER

SPREADS
Material Evenly

COMPACTS
to Uniform Density

LEVELS
Automatically
Without Forms



THE BARBER-GREENE TAMPING-LEVELING FINISHER

When the job calls for the highest quality bituminous surface, you'll do it best with the B-G Tamping-Leveling Finisher.

With this superbly designed machine, you are able to lay every type of mix — hot or cold — from clay stabilized gravel to high-type sheet asphalt. Whatever type mat you are laying, the B-G Finisher automatically measures the correct amount of compacted material — then simultaneously tamps, levels and strikes off to produce a ripple-free surface that is maintained under rolling and

traffic. Because the material is compacted while it is being laid, you are assured of a surface of uniform density. And with the B-G leveling principle you compensate even for abrupt changes in the subgrade.

It will pay you to investigate this unequalled, universally preferred method of paving streets, highways, runways, parking lots, tennis courts and similar jobs. You will learn, for example, how the B-G Finisher saves truck time, minimizes rolling and reduces the size of crew. Investigate today!

Barber-Greene

Aurora, Illinois, U. S. A.

Avoid Legal Pitfalls

him. In one of those cases (Kremer v. United States, 88 Fed. Supp. 740) the Court of Claims decided that a contractor could not complain of delays due to wartime conditions prevailing when the particular contract was made. But in that case damages were allowed for the Government's 6-day delay in furnishing bench marks to enable foundation work to proceed, after notice to proceed had been given.

Concealed-Pipeline Damage Was Not Due to Negligence

THE PROBLEM: In grading rural property, defendant contractor unintentionally ran into and damaged plaintiff's pipeline maintained underground by permission of the landowner. Easement for maintenance of

the line was recorded, but defendant did not know of its existence and was not shown to have been negligent. Was defendant liable on a theory of trespass upon plaintiff's rights?

THE ANSWER: No. (Socony-Vacuum Oil Co. v. Bailey, 109 N. Y. Supp. 2d 799, decided by the New York Supreme Court, Cattaraugus County.)

Special Assessments Valid

THE PROBLEM: A sanitary district specially employed an engineer to supervise sewer construction let to a contractor, and to make special assessments. Were these assessments, levied for the improvement, invalidated by the fact that the engineer was also employed by owners of property within the district, to subdivide the same?

THE ANSWER: No. (Raisch v. Sanitary District No. 1, Marin County, 240 Pac. 2d 48, decided by the California District Court of Appeal, First District.)

Because the engineer was not interested in the construction contract, the court found it unnecessary to determine whether a specially employed engineer is under the same disability to have an interest in such a contract as an engineer who is a public officer of the authority awarding a contract.

The court emphasized that, in a legal sense, a lot owner is not a party to a special-improvement contract which is to be paid for by the levy of special assessments. He bears no contractual relationship to the contractor. As the California Supreme Court had previously declared under the statutes of that state, the lot owner may challenge the validity of proceedings under which assessments are levied, but "has nothing to say in determining whether the work shall or shall not be done by the contractor, nor—in the absence of fraud—whether the work has been done according to contract."

Acceptance Meant To Be Read As Final Acceptance

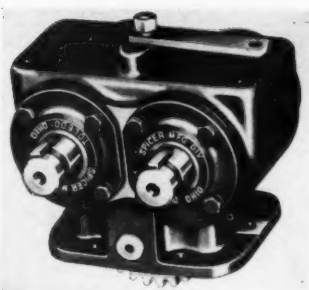
THE PROBLEM: A New Jersey statute governing public contracts required claimants for labor and material furnished to submit to the contractor's surety statements of amounts due, within 80 days after acceptance of the work, and to sue on the bond within one year after such acceptance. A school-board committee adopted a resolution, recommending that work be accepted by the board subject to the terms of the contract, plans, and specifications and to counsel's approval of any guarantees that might be required. Twenty months later the board adopted a second resolution, accepting the work as having been completed. Did the time limits in the statutes run from the date of the first or the second resolution?

THE ANSWER: From the date of the second, because the first resolution showed only a conditional acceptance. (Paul H. Jaehning, Inc. v. Standard Accident Insurance Co., 87 Atl. 2d 558, decided by the Essex County, N. J., County Court, Law Division.)

Remember—Safety Is No Accident!

CONTRACTORS AND ENGINEERS

All shafts or gears are mounted on tapered roller bearings. Both shafts may be assembled to the front or rear, or one to the front and the other to the rear. Changing the input gear adapts the unit to other transmissions. Both cable or lever



For further information write to

The brochure includes: a research report of the effect of various fasteners on the fatigue strength of a structural joint; ASTM specifications for quenched and tempered high tensile steel bolts; and specifications

A district engineering office in Milwaukee, Wis., has been opened by KSM Products, Inc., Merchantville, N. J., manufacturer of studs and equipment for electric arc stud welding. Jack Harris, who has specialized in the welding field and is experienced in a range of stud-welding applications, is District Engineer.

EUCLID



These 8-inch steel forms are easily dropped from the truck after being loaded by the Pitman Hydra-Lift.



A Cleveland C-10 gun in the hands of the workman in the background drives form pins as a Jaeger portable compressor furnishes air.

Concrete Paving Crew Beats 120-Day Time Limit

By RAY DAY

(Photo on page 1)

• CONCRETE paving crews of Peter Kiewit Sons' Co. of Omaha and Denver beat a 120-day paving schedule last fall by 25 per cent south of Castle Rock, Colo., where another section of the new highway between Denver and Colorado Springs was finished. In many respects this 8.1-mile portland-cement-concrete job was as important a project in 1952 to the Colorado State Highway Department as the 1951 construction of the Denver-Boulder Turnpike. For the new road

will serve the ever-mounting traffic count, on a free basis, between Denver and Colorado Springs.

Approximately 22 miles of new 2-lane concrete highway, built by Northwestern Engineering Co. and Western Contracting Corp. was recently opened between Denver and Castle Rock. It includes such modern traffic features as 4-lane divided sections on hilly grades. The 8.1-mile job finished last year extends the initial work, which was on a new location between Denver and Castle Rock, by paralleling U. S. 85-87 south of Castle Rock to make a modern divided highway of this ex-

isting road. Kiewit's job called for construction of a new 24-foot concrete lane east of the existing road on a grade previously established by Harron & Strong, contractor of Denver.

A feature of the new work was a joint system which was all sawed, instead of being formed or cut by older methods. According to Mark Watrous, Chief Highway Engineer, the smaller sawed joints are expected to be smoother riding, more watertight, and less demanding of costly maintenance than conventionally grooved contraction joints. Sawed joints were first used in

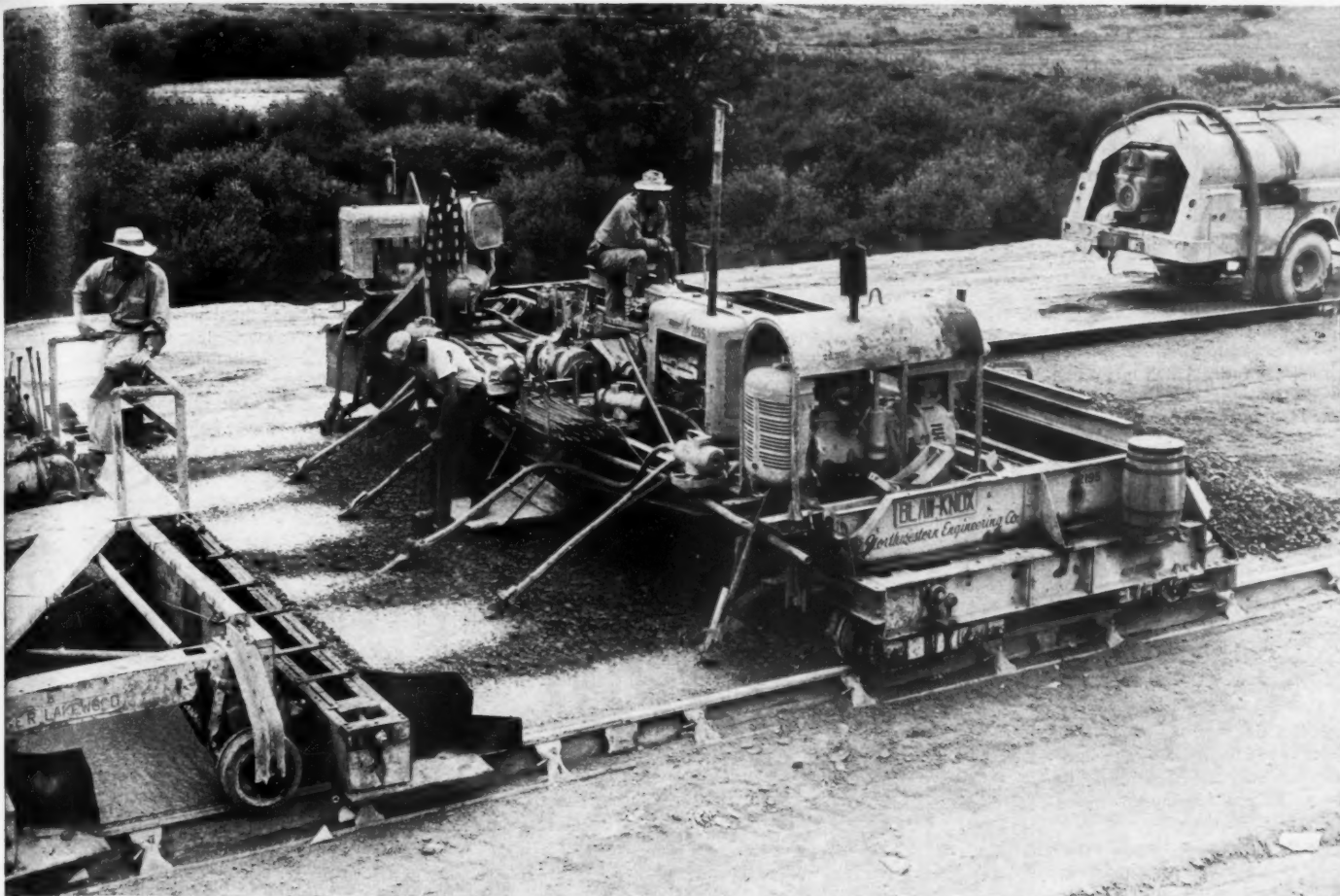
Colorado on the Denver-Boulder Turnpike, and their characteristics were so favorable that the design was adopted on the State Highway job.

Kiewit's contract also called for construction of the broad 10-foot shoulders which lie on either side of the new slab. These shoulders consist of compacted gravel, with a bituminous penetration and armor surface 6 feet wide to keep surface water from seeping into the subgrade. A gently sloping drainage ditch between the two concrete roadways carries rain water away and gives valuable snow storage.



Working between the forms, the Rex 34-E paver dumps a 1½ yard batch of concrete in front of the finishing machines.

CONTRACTORS AND ENGINEERS



Following right behind the paver is this Blaw-Knox spreader with Dart and Viber vibrators. Right on its heels is a Jaeger-Lakewood finisher.

The project was typical of Peter Kiewit Sons' Co. layouts, in that it was efficiently organized, the various construction phases were generally closed up in a short construction distance, and all equipment was in new condition. The company rented the batching and cement equipment, paver, concrete spreader, and finishing equipment from Northwestern Engineering Co. of Denver to save a long move for its own equipment much farther away. This equipment was also in excellent condition; as a matter of fact, good equipment maintenance is stressed by Morris Adelstein, Northwestern's President, about as strongly as it is by Kiewit.

Work began August 4, with 120 days to go. CONTRACTORS AND ENGINEERS visited the job in mid-September, and completion of the

concrete pavement was only 2 weeks away. Project officials expected the pavement to be finished with but half of the calendar time used up. And shoulder work had begun.

Paving Preparation

The grade previously established by the excavating contractor was generally in excellent condition, having just been shaped and compacted ahead of Kiewit's crews. About the only preparation for concrete consisted of placing a 1-inch sand cushion over the grade. This material was stockpiled along the road, and was trucked from the stockpiles to the grade. A 1-yard Lull Shovel loader mounted on a Case tractor loaded this material out of the stockpile.

The sand-cushion material was placed between two lines of Blaw-

Knox and Heltzel 8-inch steel forms, set to line and grade on the subgrade. With the exception of minor hand shoveling, the forms needed no trench excavation. When the sand-cushion material was in, it was thoroughly tamped by Cleveland Formgraders to prevent rocking, one machine being mounted on each line of forms. Exceptional care was used to get the bases tamped tight, because the slab was 24 feet wide and nobody wanted to see the forms rock when paving equipment moved along. There was approximately 3,000 linear feet of forms on the job, making it possible to set one full day's run and a little more each day. However, at the start of a day's run, forms were generally within about 500 feet of the paver.

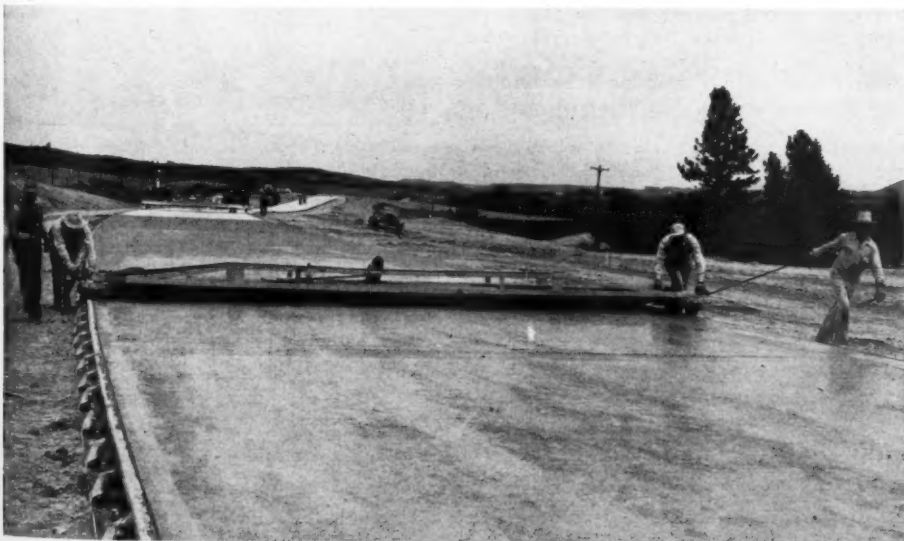
The form-setting crew was lim-

ited to about 12 men, and this part of the work was as highly mechanized as the paving. Forms were picked up and moved ahead by a Pitman Hydra-Lift, mounted on the rear of a small Chevrolet truck. A Cleveland C-210 pin-driving gun and a small Jaeger compressor were used to set the steel pins as soon as several lining experts had established the forms to line and grade. Careful checking with a tape for pavement width was the rule, and measurements from a tight string line checked the depth of pavement.

Central Batch-Plant Setup

A batching-plant setup was made about 3 miles south of Castle Rock, not quite in the center of the project, but close to a railroad siding where cement cars could be unloaded and

(Continued on next page)



Cement finishers pull a burlap drag to apply the final roughened finish to the new slab.



Clipper saw cutting a 2-inch-deep longitudinal joint.

Paving Crew Beats 120-Day Time Limit

(Continued from preceding page)

spotted. Sand and aggregates were trucked in from the commercial plant of Coulee Sand & Gravel Co. of Sedalia, about 18 miles from the plant. The material was typical of Platte River sand and aggregates in the Castle Rock and Denver vicinities, and consisted of sound hard particles with a high percentage well rounded by travel.

Ideal bulk cement was used. It was shipped in to a rail siding about 1 mile from the batch plant, removed from the cars by a Butler unloader, and trucked over to a Blaw-Knox cement silo, where it was batched out to the fleet of trucks which hauled to the paver.

Sand and aggregates were loaded to the bins of a Blaw-Knox batch plant by a Northwest Model 6, whose 1½-yard clamshell bucket kept ahead of the high-speed paving operation. A fleet of batch trucks was partly rented and partly company-owned. On the longest haul there were 20 such dump trucks in the fleet. By working from north to south with the paver, batch trucks were able to haul over pavement much of the way. Generally they used the old 2-way slab on existing U. S. 85.

The concrete mix was a 6-sack batch, with 1½-inch maximum-size aggregates, designed for a 28-day strength exceeding 3,000 pounds and for field placement at a 2-inch slump.

High-Speed Paving

Paving moved rapidly, without so much as a hitch. The paver was a Rex 34-E machine, capable of handling a 1½-yard batch of concrete every minute. Batch trucks came in to the paver along the existing highway, crossed over, and backed into the skip. Wherever it was possible, the paver was spotted on a shoulder along the forms. Through several sharp cuts, however, it had to be spotted between forms.

Mixing water was pumped from a nearby creek, hauled by a truck transport to the paver, and transferred to a pair of special storage trailers, which then fed the water into the paver drum. After the batches had been mixed 60 seconds, they were dumped on the sand cushion in such a way as to spread the concrete as much as possible with the paver bucket before the spreader began its work.

The equipment lineup for spreading and finishing the slab included, in order, a Blaw-Knox spreader, a Jaeger-Lakewood finishing machine, a Koehring Longitudinal Finisher, followed by long-handled float finishing, straightedge work, a pulled-hose, and finally a pulled-burlap finish. Vibration was done thoroughly just behind the spreader, where four Dart vibrators worked the center of the slab and a Viber machine worked each side next to the forms. Midway in the slab 24-inch steel dowel bars were inserted at 2-foot intervals along the longitudinal center joint. A special embedding fork was used for this purpose, the man who installed the dowels standing on a small platform between the vibrators on the back

of the spreader.

Since all joints were sawed, no mechanical provisions had to be taken for this work at the time the concrete was placed. The surface was simply finished out dense and smooth, with finishers closed up as tightly behind the paver as possible. Edging tools were used along the form lines to make a rounded corner, and any excess concrete spilled along the base of the forms was promptly shoveled off as the pour progressed.

When the concrete surface had taken on its initial set, an application of Hunt Process-Gray membrane curing solution was made. The Hunt Process Co. of Los Angeles not only had the curing contract under Kiewit, but also was re-



Superintendent R. V. Hegarty talks it over with J. Herrera and W. Fitzpatrick, Colorado State Highway Engineers.

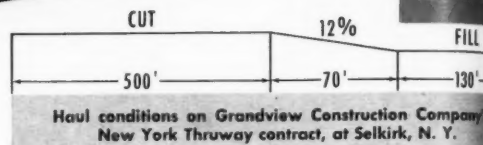
sponsible for filling the sawed joints with mastic after they were cut.

Joint Sawing Keeps Pace

It takes very little imagination or common sense to see the importance of keeping caught up close to the paver with concrete sawing, because that operation is always faster and requires fewer new blades when the concrete is green. Concrete sawing work was therefore set up to keep pace with the paver by completing the sawing each day of whatever was placed the day previously.

Three Clipper concrete saws were brought in to keep up with estimated paver schedules, and the work went along so nicely that it was usually possible to hold one of the machines

51 PAYLOADS AN HOUR



LOAD—haul—spread—and return up a 12% grade—51 times per hour!

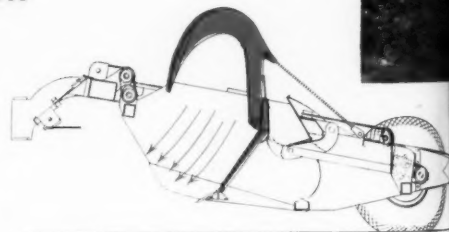
That's the record of the three Heiliners owned by Grandview Construction Company of Mt. Vernon, N. Y. Moving 1,400,000 cu. yds. of sand clay with a heavy water content, each Heiliner made 17 trips per hour—with an average cycle time of 2 min. 56 sec.

Here's the kind of fast-stepping Heiliner performance which makes earthmoving profitable. It's the kind of production that gives *you* the edge when bids are let.

Positive "TILTING FLOOR" EJECTION HELPS SLASH CYCLE TIME!

On Grandview's New York Thruway job, spread and turn time averaged 15.9 seconds . . . spreading heavy, sticky sand clay! It's proof positive that the Heiliner's positive "Tilting Floor" ejection helps cut cycle time to the bone.

Heil's exclusive "Tilting Floor" ejection is the simplest type of forced ejection known. The floor of bowl is



hinged back of the cutting blade. As the relatively long push-out ram is activated by the relatively low line pull, the floor simply tilts up to a maximum discharge angle of 75°. The load is forced out the wide front opening, while even the stickiest material is scoured from the sides and stationary back of the bowl. Material is dumped fast and clean . . . there's no extra yardage left in the bowl to cut down the size of your next load.



13 AND 15-TON HEILINER SCRAPERS

20-TON HEILINER BOTTOM DUMP SCRAPERS

6, 9, 11 AND 14-TON TRACTOR DRAWN SCRAPERS

CABLE POWER SCRAPERS

in reverse as a standby unit. Attendant plant with the saws consisted of a 1,000-gallon water-tank trailer, pulled by a Farmall tractor or a small truck. On this trailer was mounted a small Kohler generating plant to furnish power for the operation of a Fairbanks-Morse water pump, necessary to furnish water pressure for cooling the saw blades.

The longitudinal-joint location was marked by a yellow crayon stripe accurately placed down the pavement, and the same system was used to mark the transverse joints, at 20-foot centers.

The joints were cut 2 inches deep and $\frac{1}{8}$ inch wide. By starting with a new blade, the groove was $\frac{3}{16}$ inch wide, but the gradual loss of gage



Workmen fill the sawed joints with mastic material.

due to wear reduced the groove to its minimum dimension. As soon as the minimum dimension was reached, the blade was discarded.

The transverse joints were designed square with the slab, in contrast to some of the skewed joints sawed by the California Division of Highways on concrete pavement.

Filling these joints with mastic material was no small accomplishment in itself, because the mastic had to penetrate to bond with the bottom of the cut. The design of a feeder pipe which would penetrate a $\frac{1}{8}$ -inch crack and feed the heavy-bodied mastic in the groove was an assignment calling for some good machine work on the nozzle.

The Hunt Process crew used an ordinary pressure pipe 1 inch in diameter, similar to that often used in applying mastic to the joints on irrigation canals. But the application head was finely machined to let the mastic escape. A small truck-mounted compressor furnished the "push" to a pressure pot. Several mastic recipes were tried to get one which would effectively seal the joints but which would flow easily. The mastic was applied until it built up above the pavement, and this excess was then scooped off clean with a trowel, leaving the pavement neatly grooved and sealed.

Shoulder Construction

Shoulder construction was not difficult, because the trucks which hauled the shoulder material were able to operate out of traffic on the new highway. The gravel specifications for this material required that the pit-run aggregate be screened, however. After a 2-inch-minus product was made, it was trucked out to the site, dumped, blade-mixed by a No. 12 Caterpillar motor grader, rolled by an International ID-9 and a Bros rubber-tire roller, and covered with an asphalt-penetration treatment. The asphalt sealed off the base and subgrade under the new concrete slab.

The project was completed well ahead of the winter season. And Colorado motorists operating between Denver and Colorado Springs now have almost half the distance available for smooth, safe, trouble-free travel. "Safe" is somewhat relative, of course. A 28-mile completed section of some of Colorado's most modern highway was open but a few days before it had its first traffic fatality.

Personnel

The project was under the general supervision of Mark U. Watrous, who as Chief Engineer heads up the Colorado Department of Highways organization.

Peter Kiewit's supervision was under the direction of Dan Bell, Denver District Manager, with Bob Turpin as General Superintendent and R. V. Hegarty as Field Superintendent.

H. E. Sawyer, of Macwhyte

Herbert E. Sawyer, a Director of Macwhyte Co., Kenosha, Wis., manufacturer of wire rope, died on December 28, 1952. He was 74 years of age. Mr. Sawyer joined Macwhyte as Treasurer in 1922 and recently retired from active management as Vice President and Treasurer.

WITH THREE FAST-STEPPING HEILINERS

**STEP UP YOUR
EARTHMOVING PROFITS
WITH THESE
HEILINER ADVANTAGES!**

For faster loading, the dirt "boils" up in the center of the bowl, loading front and back evenly so no long pull is necessary to fill clear to the back. Haul speed is fast . . . 25 MPH fully loaded. The powerful 200 HP Cummins diesel gives you lugging power to spare, while big 24:00 x 29 tires with wide-base rims provide the extra traction and flotation you need in soft going. Heil's exclusive, patented Hydro-Steer handles with passenger car ease . . . this easy steering control plus big, safe four-wheel brakes give operators confidence to use the full

power and speed of the rig. Heil's famous planetary drive, with full 4" gear faces on sun and planet gears, provides a low-torque drive for smoother, more positive power transmission to each wheel, and permits full utilization of engine horsepower.

Heiliners are designed from the ground up with many other features to keep up a profit-making pace on every job, shift after shift. Watch a Heiliner on the job, then ask your Heil distributor for complete details about every feature.

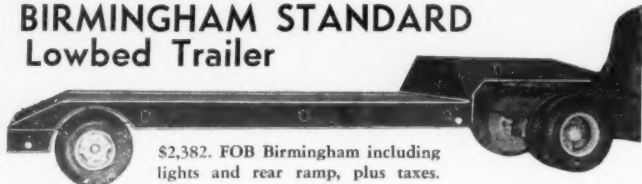
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\$2,382. FOB Birmingham including lights and rear ramp, plus taxes.

Model 415 FL, 15-ton capacity. Tubular rear axle with Timken bearings. Open hearth steel frame, electrically welded. Select car stock oak decking 2 3/4" thick. Bendix Westinghouse airbrakes. Birmingham Trailers offer greater capacity, ease of handling, rugged wear. Furnished in standard models or special design.

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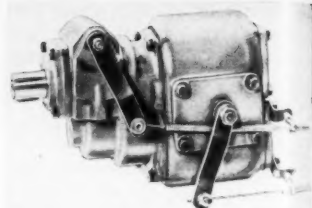
BIRMINGHAM MANUFACTURING COMPANY, Inc.
P. O. Box 1351, Birmingham, Alabama

New Power Takeoff

A new power takeoff said to drive accessory equipment at speeds slower than those obtainable with conventional units is announced by Chelsea Products, Inc., Chelsea, Mich. Low-speed ratio in either direction is 36 per cent of the company's standard model. There are two speeds forward and two reverse.

The unit has interchangeable gear which permits adaptation of power takeoff to any truck transmission. All gears and shafts are of alloy steel. Helical gears give minimum noise with maximum load capacity. Bearings are roller type. Idler gear is supported on cageless roller bearings.

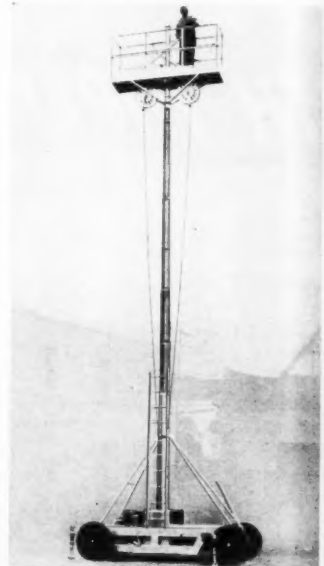
Shafts can be mounted above or below center, front or rear. The unit is available with the following shaft sizes: 13/16 inch, 1 inch, 1 1/8 inches, 1 1/4 inches.



For further information write to the company, or use the Request Card at page 18. Circle No. 499.

Mobile Platform Lift

A new mobile lift with a hydraulic jack has been developed by Hamlin-Klock Corp., 28 N. Marengo Ave., Pasadena 1, Calif. According to the manufacturer, the lift raises 6,000



pounds of building material to 38 feet, on an 8-foot platform which rotates 360 degrees. For raising trusses, tank tops, and heavy pipes, it has a removable jack post with 6,000 pounds lifting capacity. Controls are both on the platform and on the ground. A 7 1/2-hp Wisconsin engine with self-starter drives the hydraulic columns.

As a safety feature the lift will descend at a controlled slow rate, even in case of a complete rupture of a hydraulic line. A by-pass valve in the base can be used in case of control failure.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 418.

Literature on Tarpaulins

Data on fire-resistant tarpaulins are available from the H. Wenzel Tent & Duck Co., St. Louis, Mo. Features of the FlameZel tarpaulin stressed by the manufacturer are the rope bound into the hem all around the edge, double sewing throughout, and the flame-resistant finish.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 502.

Buchanan on A-C Board

William E. Buchanan, President and Treasurer of Appleton Wire Works, Inc., Appleton, Wis., has been elected to the Board of Directors of Allis-Chalmers Mfg. Co., Milwaukee, Wis. He replaces Edmund Fitzgerald.

cuts direct labor costs

Transports, elevates and places concrete in one operation.

REX PUMPCRETE®

Cuts Costs 4 Ways

cuts preparatory costs

No trestling, scaffolding, towers or expensive buggy runs.

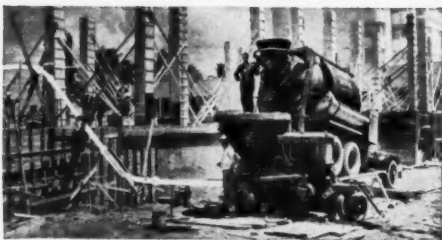


cuts "dead time"

Places concrete while plumber, carpenters, formsetters, etc., are at work. No interference. Steady flow.

cuts non-productive moving time

No need to move mixing equipment. Just spot Pumcrete® at best place and leave it there.



Find out how pipe line flexibility can pay off on your jobs. See your local Rex Distributor or write to Chain Belt Company, 4666 W. Greenfield Ave., Milwaukee 1, Wis.



CONSTRUCTION MACHINERY

Roebbling a Subsidiary Of Colorado Fuel & Iron

The Colorado Fuel & Iron Corp., New York, N. Y., has acquired all the manufacturing business, plants, and inventories of John A. Roebbling's Sons Co., Trenton, N. J. The Roebbling properties will be operated by John A. Roebbling's Sons Corp., a

newly formed and wholly owned subsidiary of Colorado Fuel & Iron. Charles Allen, Jr., Chairman of Colorado Fuel & Iron, is named Chairman of the Board; A. F. Franz, President of Colorado Fuel & Iron, is president of the new corporation; and Charles Roebbling Tyson, President of Roebbling since 1944, is Executive Vice President. The purchasing firm's 11 Board Directors were elected to the Roebbling Corp. Board in addition to Mr. Tyson.

Roebbling, founded in 1841 by John A. Roebbling, builder of the Brooklyn Bridge, operates plants in Trenton and Roebbling, N. J., which produce steel wire, cold-rolled-steel specialties, wire rope, electric wire and cable, and bridge products. The Colorado Fuel & Iron Corp., the nation's ninth largest steel producer, operates basic steel plants in Pueblo, Colo.; Buffalo, N. Y.; and Claymont, Del. With its subsidiaries, it has

seven other plants in Massachusetts, Pennsylvania, and California.

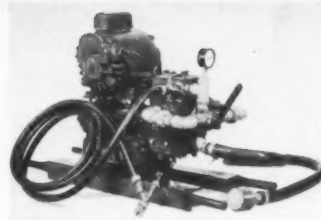
A Liquid-Tire Pump

A pump for filling heavy-duty tires with liquid is made by the Winona Mfg. Co., P. O. Box 107, Winona, Ohio. Special adapters make it suitable for use with the large-bore valves of earth-moving equipment.

When the tire is deflated the adapter is screwed to the valve stem. The suction hose is kept in the liquid container always completely submerged. The pump evacuates the remaining air from the tube. When no more air bubbles come out of the suction hose the tire is turned valve-stem up and the liquid is pumped in under high pressure.

The pump has a $\frac{3}{4}$ -hp 110 to 220-ac single-phase motor.

Further information may be se-

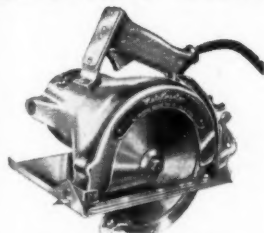


cured from the company. Or use the Request Card at page 18. Circle No. 414.

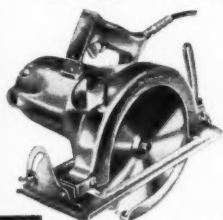
Arma Promotes Allen Walz

Allen W. Walz has been promoted to be Executive Staff Assistant to Clifton T. Foss, Vice President of Engineering for Arma Corp., Brooklyn and Garden City, N. Y. Arma Corp. is a subsidiary of American Bosch Corp., manufacturer of magnetos. Mr. Walz was formerly the administrator of technical personnel.

BRADFORD ELECTRIC SAWS



Model 160 — 6" Saw
(Can be furnished with blade on right or left side)
Vertical depth of cut 2"
Bevel cut at 45°: $1\frac{1}{4}$ "
Net weight 10 lbs. 8 oz.



Model 180 — 8" Saw
Vertical depth of cut 2 29/32"
Bevel cut at 45°: $2\frac{1}{16}$ "
Net weight 17 lbs. 8 oz.

These new 6" and 8" Bradford Portable Electric Saws are ruggedly constructed and fully powered to take on the toughest sawing jobs! They're better designed—inside and out—for easier handling, smoother sawing, more accurate work. You can feel the difference in the Bradford design!

And Bradford Saws are built to last. Ball bearings with permanent lubrication are used throughout. Gears are helical cut to give maximum driving power. A powerful 110-volt AC/DC motor drives the blade with quiet, cool-running efficiency.

Own a new Bradford Portable Electric Saw — they're the choice of craftsmen everywhere. See your Bradford dealer for a demonstration. Write for bulletins giving specifications and prices.

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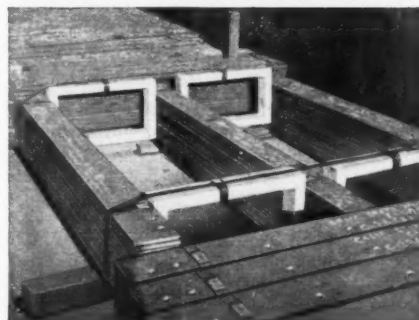
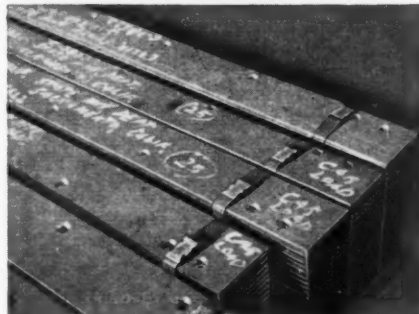
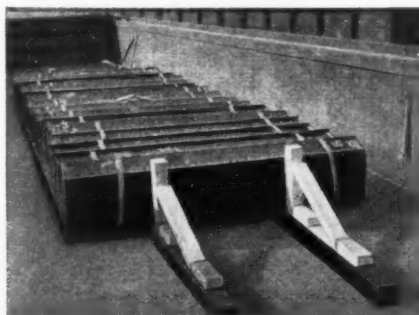
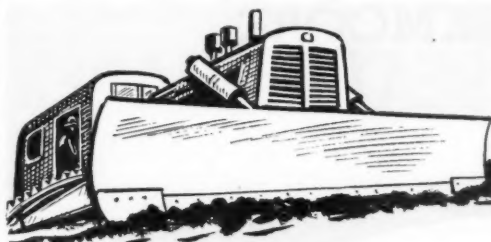
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SELL used equipment
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The Trading Post Section of
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See page 109



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Just as Pacal Blades resist wear, fit tighter... last longer, Pacal does a job for you. Whether you're just around the corner or 2,000 miles away, your Pacal Blades are expedited carefully. When you want blades, call on Pacal.

Use PACAL Heat Treated Plow Bolts... they increase the efficiency of PACAL Blades.

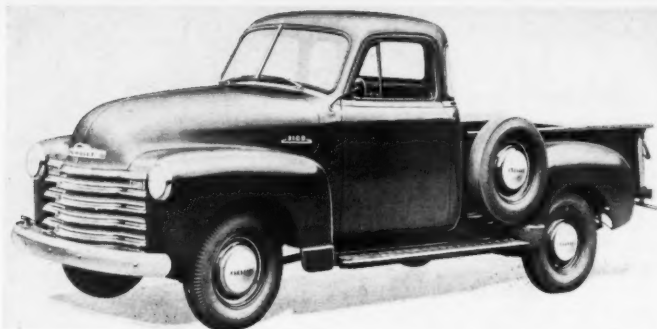


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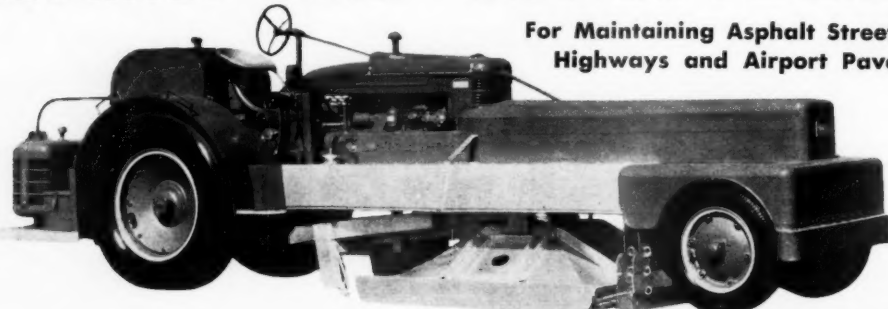
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MAKES STREET, HIGHWAY AND AIRPORT FUNDS GO FURTHER

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ASPHALT MAINTENANCE COMPANY

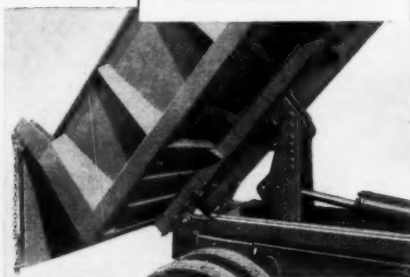
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1. Powered by International Engines.
2. Hydraulically controlled throat.
3. Width of planing or cutting blades 72".
4. Fuel oil fired.
5. Successful operation on all types of bituminous pavements.
6. 1 operator required.
7. Reduces maintenance, repair and replacement costs approximately 35%.

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no job is too BIG-or too TOUGH!



MODEL 880 heavy duty hydraulic hoist easily handles 10½ to 15½ ton loads

● Throughout the world, construction men depend on Galion dump bodies and hydraulic hoists to handle their toughest jobs. They like the extra years of service built into every Galion... their lower maintenance and operating costs. And, they are enthusiastic about Galion's Fulcrumatic hoist action that equalizes mechanical pressure, lifts more, easier... eliminates strain on truck and body.

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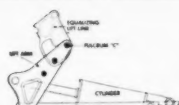


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THE



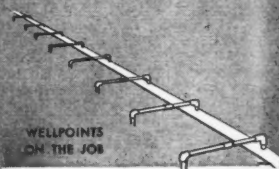
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ALLSTEEL BODY COMPANY • GALION, OHIO

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Pre-drainage with Complete Wellpoint Systems prevents trouble wherever subgrade water is a problem. By eliminating the water hazard, you usually eliminate any need for sheeting—you often are able to continue operations even in sub-zero weather—you frequently can use equipment which "wet grounds" would rule out—and you always can count on completion in scheduled time at scheduled costs!

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COMPLETE WELLPOINT SYSTEMS

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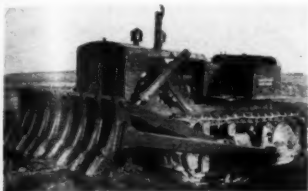
**Strike Back!
GIVE**

TO CONQUER CANCER

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Asphalt Institute Officers

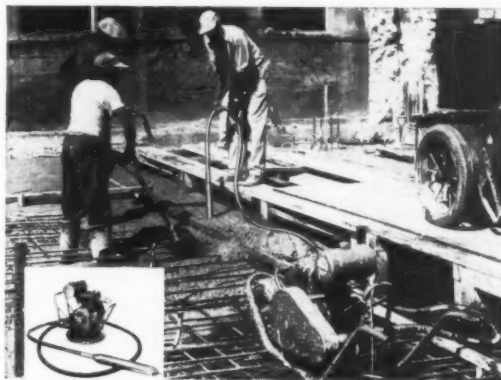
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WHITE VIBRATORS OFFER LOWER OPERATING COSTS

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means 40% more "profit-time" for you. JENNY reduces labor costs as much as 90% on cleaning brick, tile, masonry, concrete, and in preparing bridges, structural work or machinery for painting.

Hypressure JENNY is sturdy . . . portable . . . economical and easy to use. Ordinary labor can operate it. There is a model to suit your needs.

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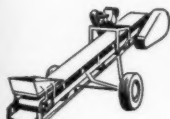
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WILLARD Weigh-Batch Loader



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WILLARD Truck Mixer

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READY MIX "the Willard Way"

FEBRUARY, 1953



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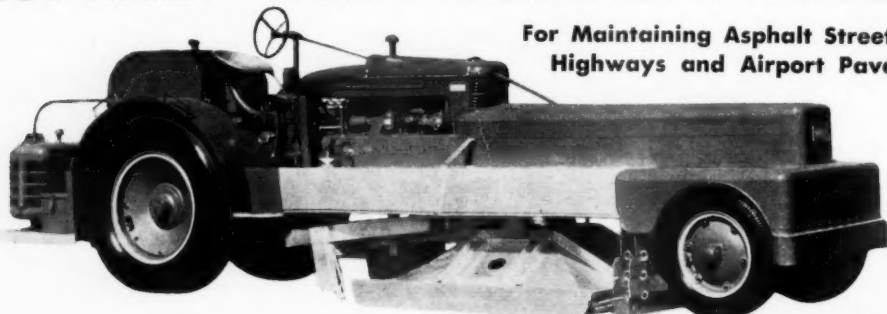
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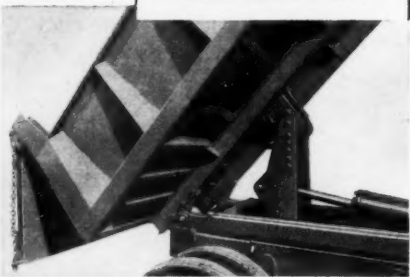
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A-6829

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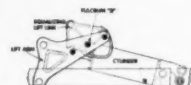


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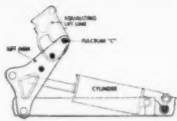


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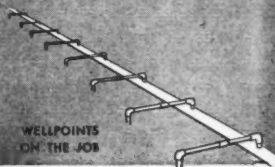
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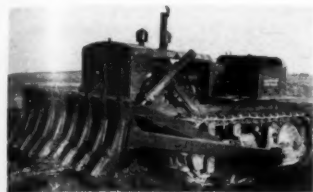
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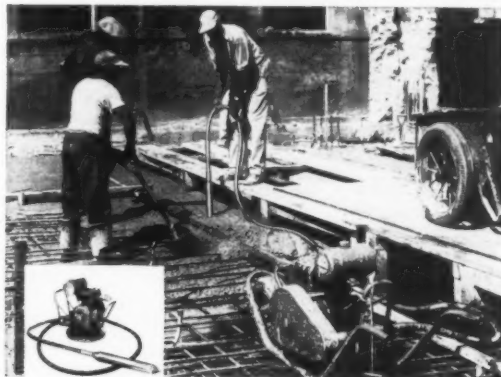
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White Mfg. Co.

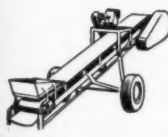
Indiana



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service and repair equipment
40% FASTER

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STEAM CLEANER

Reduce "DOWN-TIME"

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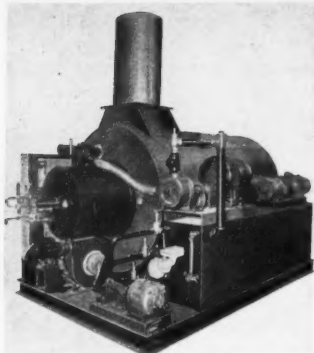
WRITE TODAY for complete information and prices. No obligation.

HYPRESSURE JENNY DIVISION
HOMESTEAD VALVE MANUFACTURING COMPANY

P.O. BOX 30

CORAOPOLIS, PA.

91



New Hot-Oil Heater

A new hot-oil heater is added to its line of oil and gas-burning equipment by Hopkins Volcanic Specialties, Inc., Alliance, Ohio. This unit is built according to ASME boiler codes, and is said to be capable of burning any grade of fuel oil or

natural gas.

The Hopkins hot-oil heater is built in sizes producing 1 to 3 million Btu per hour. It is an all-welded steel single-coil double-pass unit.

For further information write to the company, or use the Request Card at page 18. Circle No. 517.

ASTM's New Standards Edition

The American Society for Testing Materials has published the October, 1952, edition of its standards on mineral aggregates, concrete, and non-bituminous highway materials. The book includes, in their latest form, 93 specifications, test methods, and definitions developed by several ASTM committees. Standards cover aggregates, concrete, brick and block-pavement materials, concrete-curing materials, expansion-joint fillers, and cement. Miscellaneous specifications and tests include:

aggregate for masonry mortar; inorganic aggregates for use in interior plaster, brick paving, wooden paving block for exposed pavements; materials for soil-aggregate subbase, base, and surface courses; and a number of tests relating to sieve analysis.

Copies of the booklet may be obtained from the ASTM, 1916 Race St., Philadelphia 3, Pa., for \$2.75 each.

Folder on Line of Pumps

A bulletin describing its line of pumps is now available from Marlow Pumps, Box 556, Ridgewood, N. J. Self-priming and straight centrifugal models, diaphragm mud units, and plunger sludge pumps make up the line covered.

The diaphragm pump handles water laden with dirt, sand, and small stones, and is used to carry

sludges and slurries. The self-priming centrifugal pump with 50 to 4,000-gpm capacities is recommended for dewatering excavations and for sump pumping.

This literature may be obtained from the company by requesting Bulletin No. G-52, or by using the Request Card at page 18. Circle No. 534.

**YOU DON'T NEED THIS →
to install underground structures**

**EXCAVATING
STREET CLOSED**

It isn't necessary to close busy streets and snarl traffic when you install sewers, water lines and other underground structures.

By tunneling with the aid of Armco Liner Plates, you can keep the job underground and out of the way. Equally important, you don't have to tear-up expensive pavements or disrupt business.

Armco Plates make tunneling simple. Unskilled crews do the work easily and economically, unhampered by bad weather. Corrugated metal design means that Armco plates have ample strength without excess weight or bulk. One or two men can carry, hold and bolt a sec-

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With Armco Liner Plates you select exactly what you need from a wide range of sizes and gages. There is no need to compromise on either economy or efficiency.

Try tunneling that next job with Armco Liner Plates and take advantage of their many time- and money-saving features. Write us for additional information. Armco Drainage & Metal Products, Inc., 1553 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

Armco Liner Plates



**it takes more V.P.M.
to make
NO-SLUMP CONCRETE
FLOW!**

**VIBRO-PLUS
ROLLGEAR®**
internal vibrator

Vibro-Plus handles the stiffest mix with ease—because its patented Rollgear head increases the 3600 RPM shaft speed to 11,000 to 15,000 VPM. Concrete is consolidated more rapidly, more effectively. Equipment lasts longer. Maintenance costs are less. Write for data bulletins and nearest distributor.

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CONTRACTORS AND ENGINEERS

Highway Research Is Reviewed at Meeting

Papers and Reports Covering Six Major Divisions of Highway Activities Are Presented at 32nd Yearly Assembly

FROM January 13 to 16 in Washington, D. C., the Highway Research Board of the Division of Engineering and Industrial Research held its 32nd Annual Meeting. It was attended by over 1,000 engineers and officials representing highway departments at all governmental levels, national industrial organizations, educational institutions, and various agencies of the Federal government. Over 125 new papers and reports were presented at 28 separate sessions. Most of the material was illustrated with lantern slides, movies, or displays.

The six major research fields of highway activity covered in the four-day meeting included: (1) Economics, Finance, and Administration; (2) Highway Design; (3) Materials and Construction; (4) Maintenance; (5) Traffic and Operations; and (6) Soils Investigations.

At the opening session, Dr. R. A. Morgen of the National Science Foundation spoke on "The Importance of Basic Research" and defined basic research as "a quest for knowledge for its own sake, yet based on some criterion of scientific merit". He urged that more fundamental research be undertaken, and stated that the civil-engineering group has been most backward in that respect. As an example, Dr. Morgen mentioned that practice has gone way ahead of theory in the use of air-entrained concrete.

Accomplishments

During a general session, R. H. Baldock, Oregon State Highway Engineer and Chairman of the HRB

Executive Committee, discussed the accomplishments of the Board over the past year. The most important job of the HRB to date, according to Baldock, is its role of a fact-finding authority on test-road projects, and in particular on the recent Road Test One-MD in Maryland. He stated that the WASHO test section in Idaho had been shut down for the winter, and that not enough data had been obtained so far to yield any results.

Baldock also touched briefly on a proposed test road in Illinois which would be constructed with both rigid and flexible-type pavements. This would be a four-lane divided highway, built with a series of varied pavement sections. The project is expected to cost from \$4,000,000 to \$6,000,000.

A detailed report on the WASHO Road Test was given by several of the engineers from the project. This report included a general description; construction and control; test vehicles and operations; and instrumentation, procedures, and general research.

Road Test One-MD was summarized thoroughly in a color motion picture prepared by the Bureau of Public Roads showing the live action of the field tests, the manner in which slabs broke under different loads, and a demonstration of how and why damages occurred.

Also at one of the general sessions, B. D. Tallamy, Superintendent, New York State Department of Public Works, spoke on "Critical Highway Needs". He mentioned that the Federal government collects

about \$2 billion a year in gasoline and motor-vehicle taxes, yet returns only about \$550,000,000 of that to the states in the form of Federal aid. Tallamy suggested that the Federal government should give more help to the states to overcome the problem of inadequate highways.

Awards

The Roy W. Crum Award for Distinguished Service was presented to Herbert S. Fairbank, Deputy Commissioner of the U. S. Bureau of Public Roads. The award is presented annually in recognition of "outstanding achievement in the field of highway research". Fairbank has been Deputy Commissioner in charge of all research for the BPR since 1943. He has directed a large research program independently and in cooperation with state highway departments and universities. Since 1934 he has been active in the work of the Highway Research Board, and

is currently serving as Chairman of its Department of Economics, Finance, and Administration, and of the HRB Committee on Economics of Motor Vehicle Size and Weight.

Fairbank is a native of Baltimore, Md., and was graduated from Cornell University in 1910. His entire professional career has been with the Bureau of Public Roads.

The Highway Research Board Award went to three transportation economists, also with the U. S. Bureau of Public Roads. This award is given annually for the outstanding technical paper presented at the preceding year's annual meeting. The winners are Hugo C. Duzan, William R. McCallum, and Thomas R. Todd. Their paper is titled "Recent Trends in Highway Bond Financing". It reviews principles of public credit as applied to highways, and concludes that bond-issue financing can be used advantageously

(Concluded on next page)



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Highway Research Is Reviewed at Meeting

(Continued from preceding page)

to speed up road improvement in the United States, a subject which is becoming of more and more concern to legislators, highway engineers and administrators, and the transportation industry.

The authors report that the post-war need for highway modernization has resulted in a considerable increase in credit financing by the states. During the 5-year period from 1946 through 1950, a total of over \$2 billion in highway bonds was issued by the states (including state authorities and commissions), cities, and local rural units.

The three transportation economists believe that the interest cost of a bond issue is justified by the

advantages derived from the use of the principal for immediate construction, as opposed to later construction from funds as they accumulate from normal revenues. Added savings accrue to highway users, they state, because of earlier completion of the improvements, since the cost of stopgap improvements necessary under a long-term current-revenue program is eliminated.

Wide variations in method and a tendency to experiment with different forms of credit financing are indicated in the paper. Statutory debt limitations and constitutional restrictions in some states have been circumvented by the creation of special authorities having power to borrow. In other states the traditional method of highway-bond financing is being widely used. Counties and cities, in many cases, are using general credit to finance

much-needed urban expressway and controlled-access highways. Revenue-bond financing for toll roads and other toll facilities is rapidly increasing.

Fred Burggraf is Director of the Highway Research Board.

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High-Voltage Danger Attends Pipe Laying

Contractor Lays 68-Inch Aqueduct Under City Streets; Pumps Ground Water; Uses Special Insulation Device

By Ray Day

IN the Eagle Rock district between Pasadena and Los Angeles, Calif., construction men of United Concrete Pipe Corp. and engineers of the Los Angeles Department of Water and Power last month finished a problem-ridden pipeline job. From start to finish the project was unusually difficult. The construction men who tackled the many problems knew it, as did the engineers who designed the 6½-mile 68-inch-ID connecting link between the new Eagle Rock Reservoir and the existing Rowena Reservoir.

On UCP's 5-mile \$2,500,000 contract the 19-ton pipe sections had to be handled safely by cranes working dangerously close to three high-voltage transmission lines overhead. The pipe trench had to be excavated and the sides held for thousands of feet practically alongside a railway line. Ground water at grade made the ditch sopping wet. Most formations showed a troublesome tendency to cave, so much so that trench jacks and timber bracing had to be used to hold the sides up. Many utilities had to be crossed. Storm sewers stood in the way, one of which was destined to stop a crew in its tracks for 2 weeks while the men fought mud, caving ground, and ground water. There was a 390-foot crossing under the Los Angeles River.

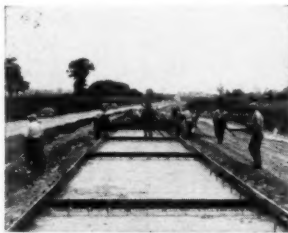
As if these conditions were not enough to give field men a headache, the start of the work was delayed by strikes in the steel workers' and operating engineers' labor unions. How United Concrete Pipe Corp. solved these many problems between July 1, 1952, and January 14, 1953—the completion date—is a story of modern pipeline contracting perhaps unequalled on the west coast during the past construction season.

A Necessary Artery

The new 6½-mile line was badly needed, because it is the main artery in the Municipal Water Department's far-flung distribution system and enables the city to utilize additional supplies of Colorado River water. Had there been any easy way for the line to be designed or laid, Water and Power Department design engineers would have found it and passed it along to UCP. But all the preliminary studies showed unfavorable ground conditions, with seep water and a probability of caving trenches. Overhead, all along the only feasible route down Eagle Rock Boulevard, were three high-voltage electric lines which made engineers and contractors alike shudder to think what might happen if anything went wrong on one of the 19-ton pipe lifts.

Final design of the aqueduct called for a 68-inch-ID pipe, consisting of

a steel cylinder faced inside and out with reinforced-concrete lining. The outer concrete wall outside the ¾-inch steel cylinder consisted of 5 inches of concrete reinforced by 2 layers of ¾-inch coiled steel reinforcing rod, while the inner liner inside the cylinder was a 2-inch layer of concrete. The pipe is a type made commercially by United Concrete Pipe Corp. at its Baldwin



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Park, Calif., headquarters, where cranes, steel forms, and other equipment were assembled to pour the 16-foot pipe sections.

The purpose of the pipeline is to carry 243 cfs of Colorado River water from the Eagle Rock Reservoir to Rowena Reservoir and other points farther down in the distribution system. The line is expected to give many years of trouble-free service.

Good Organization Whips Delays

Many of the inherent adverse conditions were minimized as the job went forward, thanks to excellent organization and ingenuity on the part of General Superintendent Roy Chinnici, his crews, and a cooperative UCP management staff. It was imperative, for example, that most of the line including the Los Angeles River crossing should be in by October 15, ahead of fall rains. Although



Looking down along Fletcher Drive in Los Angeles, we see an Austin ditching machine removing the trench excavation. The trench is heavily braced with Duff-Norton trench jacks close behind the trencher.

the original schedule called for only two headings, Chinnici was able to

(Continued on next page)

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High-Voltage Danger Attends Pipe Laying

(Continued from preceding page)

work the job from three headings in addition to a spread at the Los Angeles River crossing, to regain time lost by the labor strike. Steel crews worked several weekends to complete the concrete encasement around the river-crossing pipe.

Caving ground, an inherent problem, would have been one of the major crises had too much trench been opened up ahead of the pipe-laying crews. Chinnici minimized this potential source of trouble by maintaining close personal vigil at each heading. If a crew ran into caving ground, he saw to it that trench excavation slowed down to a speed consistent with the safety of pipe-laying crews. This policy permitted the crews to keep closed up



This is another view of the Austin trenching machine at work on the main equipment spread along Fletcher Drive.

tight behind the lead rig with the shortest possible exposure time from the trench sides. This also reduced the delay which was always possible due to ground-water conditions.

Unusual High-Voltage Insulation

Of all the organizational features contributing to the efficiency of the project, however, possibly one of the best was a safety policy in UCP's organization which whipped one of the worst conditions of all: high-voltage wires directly above the pipeline location. On Eagle Rock Boulevard, for example, there were two 440-volt streetcar power lines close by, a 1,400-volt power line almost overhead, and 11,000-volt line crossings at regular intervals. If for any reason at all a crane boom touched one of these lines, it would have been a dreadful danger to every man in the wet ditch below.

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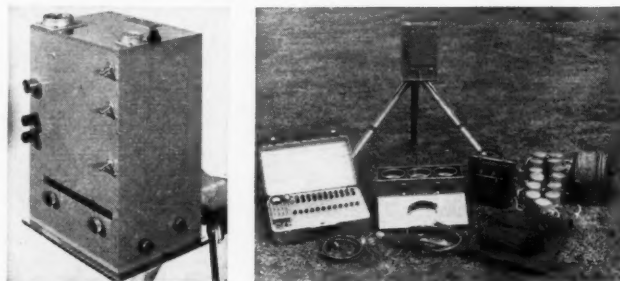
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CONTRACTORS AND ENGINEERS

safety director named A. J. Thomas who, some time ago, became concerned enough about accidental boom electrocutions in the construction industry to do something to prevent them. Working with Gordon Zane, who at that time was Master Mechanic in the company's commercial pipe yard at Tulare, Calif., these men invented a light efficient boom-insulating cage. The device was adopted for use on every crane on the job where there was any possibility of the machine working near high-tension wires. California law prohibits any operator from working his machine closer than 10 feet from such dangerous conductors, but along Eagle Rock Boulevard there was an ever-present danger that a cable sling could break, or a soft spot show up under a crane track, causing the boom to contact one of the power lines.

The insulating cage took that risk

out of the operation, because even if a crane boom had contacted a power line, the safety device would have furnished protection up to 50,000 volts. The cage consists of a 5/8-inch-rod framework, covered with a 3-ply sprayed rubber coating, with 50,000-volt General Electric insulators interposed between the cage and the crane boom. The device is fastened by quickly detachable connections at the boom-point sheave plate and at the boom-holding cable. Standard sections protect the upper 20 feet of the boom, but for special and dangerous uses extra sections can, if necessary, be added to protect the entire boom.

Thomas even worked out special insulating bushings to protect the crane hook from "hot lining" to the ground in case a load line should contact a power conductor. This, along with the insulating cage, proved so useful to contractors that El Monte Insulation & Repair Shop, El Monte, Calif., is now making it commercially. So successful was it on this job, especially under the dangerous high-tension wires along Eagle Rock Boulevard, that the "Execution Chamber"—as the section was known—was handled safely.

Equipment and Methods

Equipment and methods at each of the headings were similar, with only slight differences to fit individual conditions. Heading No. 1 had a Northwest Model 6 backhoe for scooping up broken pavement and hard formations; an Austin trenching machine for excavating the main portion of the trench; seven 8-yard International and GMC dump trucks for hauling the material; an American 40-ton crawler crane for pipe unloading and laying; and a Link-Belt Speeder 1-yard truck crane for small handling, structure excavation and miscellaneous work.

At Heading No. 2 there was an Austin trencher; a Manitowoc laying crane; a Model 25 Northwest dragline; and a Unit traveling crane for the lighter work. Heading No. 3

was peculiarly well suited for a Link-Belt Speeder backhoe and a D8 Caterpillar attending bulldozer. The backhoe did initial work, dug the trench, and laid the pipe. The dozer then backfilled the trench. In addition to the equipment at these spreads, there was a Caterpillar No. 12 motor grader for cleanup work and an Austin-Western power sweeper for brooming the location after the pipe was in and backfilled.

A working agreement with Emsco Concrete Cutting Corp. of Los Angeles insured that pavement breaking under the 8 1/2-foot-wide trench would stay out ahead of all three spreads. The pavement breakup was first outlined by a 2-inch saw cut in the street pavement, along each edge of the proposed trench. Truck-mounted R.P.B. heavy-duty pavement breakers were then used by Emsco to break out the old as-

phalt or concrete pavement ahead of the pipe crews. Daily estimates by Roy Chinnici and close contact with Emsco's crew insured that pavement breaking would stay out about a day ahead of the trench diggers. The broken pavement was loaded out to waiting dump trucks by a backhoe at each spread, and was then hauled away for use as waste.

Trench excavation was handled generally by Austin ditching machines, capable of digging 8 1/2 feet wide and 19 feet deep. The trench averaged 14 feet deep throughout the job. Despite the intersection of many utilities lines, progress at each machine averaged about 100 feet per shift. As teeth wore down on the endless bucket lines of the machines, they were replaced by H&L teeth. With the exception of

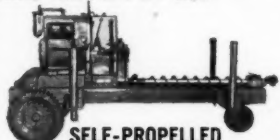
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High-Voltage Danger Attends Pipe Laying

(Continued from preceding page)

isolated sections of conglomerate and solid rock, most of the digging was in hard clay, sand, gravel, and sandy gravel material. This could be handled by the ditching machines. Conglomerate was removed by backhoes, and the hard-rock formation near Monte Sano Hospital in Los Angeles was chipped out after long hours with air guns and moil points. Blasting was not permitted.

Excavated material from the trench was loaded directly into dump trucks, which then either took the dirt out to disposal areas or hauled it back to another part of the ditch to be used as backfill. There was little secondary storage, because in practically every case the work



Art Thomas, United Concrete Pipe Corp. safety engineer, invented the boom-insulating device shown on this Unit crane. Extensions make it possible to protect the full length of a crane boom.

Robert J. Green Photo

area was congested and traffic had to remain open if possible. Even though a trench section might remain open less than 8 hours, the dirt was hauled a short distance back to some point where it could be used immediately.

Most of the formation cut by the ditch was especially bad about caving, especially if the trench sides were left exposed for longer than a day or so. Several bad slides close behind the trenching machines pointed up this tendency, and one storm-sewer intersection sloughed in so badly that it was 2 weeks before it could be passed. Duff-Norton trench jacks, spread against 3 x 12 timber supports on 5-foot centers, helped to hold the sides until the pipe sections could be laid. In general there was plenty of ground water at the grade line, and 8 Rex, Stang, and Jaeger pumps had to be used constantly to keep the trench unwatered.

The 16-foot pipe sections, weighing 19 tons each, were hauled to the job by trucks and trailers at the rate of 1 section per load. The placing crane unloaded the pipe sections, rarely leaving pipe on the ground more than a few hours ahead of the next stage, so closely integrated was this part of the work. Elimination of excessive pipe storage reduced traffic congestion a great deal. As each pipe section was placed by the cranes at each spread, it was bedded on a gravel sub-

grade which did the double duty of acting as a bearing cushion as well as a French drain for the ground water.

Backfill was a considerable problem, too, because of the necessity for getting a tight fill around the pipe as well as a fair subgrade under the pavement which had to be replaced. A systematic method of replacing the backfill was used. The pipe was first backfilled to the spring line with sand, which was then flooded by using pipe jets and water from city fire hydrants. Next, the earth backfill was put in, usually by dump trucks hauling from the several spreads, in 5-foot lifts. Each lift was thoroughly jetted with water.

The final 18 inches consisted of dry unjetted material.

A temporary asphaltic-concrete pavement was then laid so the street could again be opened to traffic. Later, after a period of 6 weeks to 3 months had elapsed, the permanent pavement was replaced by City street-maintenance crews under an agreement with the Department of Water and Power.

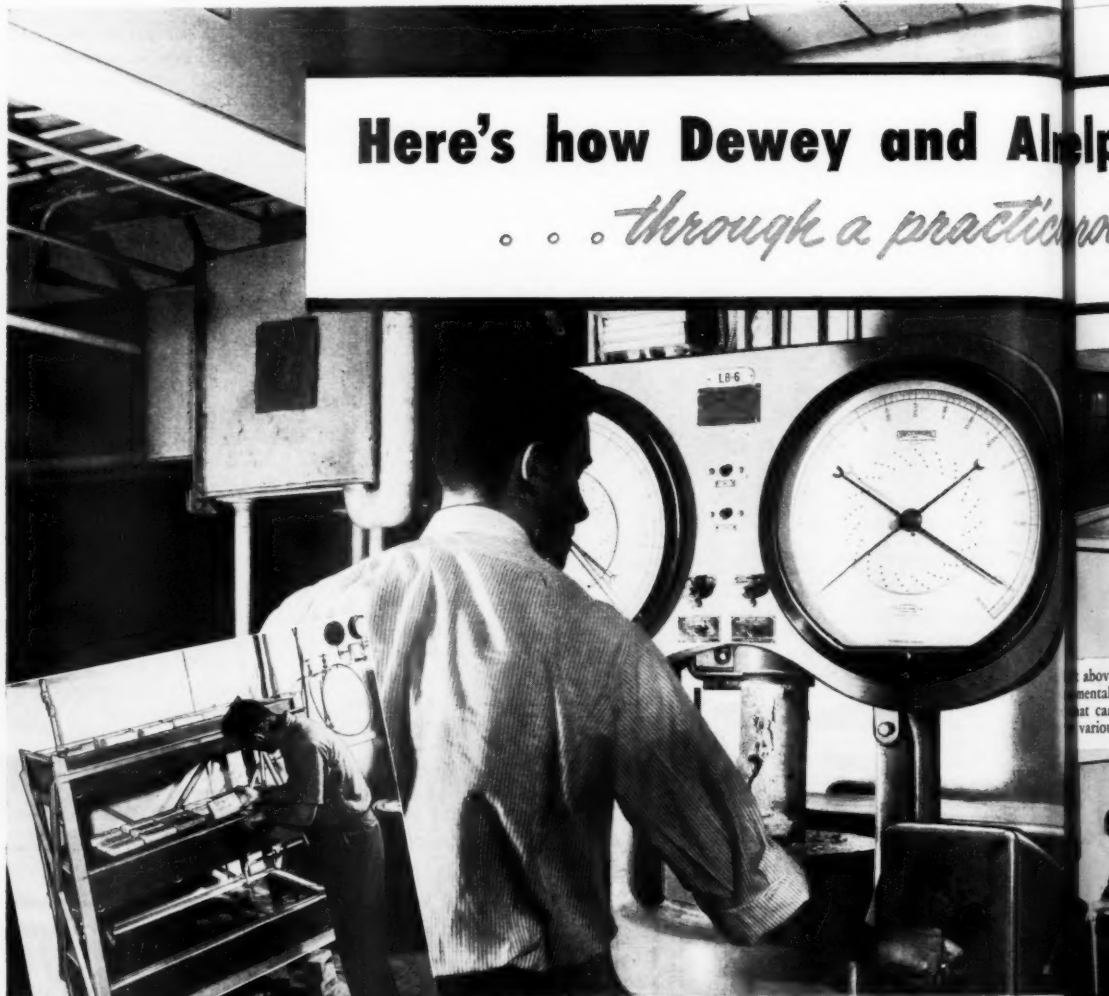
It was this system, tightened up in as short a distance as possible, which accounted for the major portion of the pipeline.

Hurry-Up River Crossing

A rapid crossing was made of the Los Angeles River near Fletcher

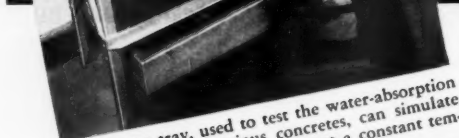
Drive, Los Angeles, when 390 feet of pipe was laid from start to finish in only 20 days. The pipe had to be placed 15 feet under the riverbed and encased in concrete. With no time to spare, it was a tough part of the work.

Chinnici looked the situation over and decided to try a daring scheme. He believed that the Corps of Engineers' concrete toe along a grouted revetment on the south bank could be used to carry the Los Angeles River flow safely. A sandbag dike was constructed along this toe to hold the water, and an earthfill cofferdam was thrown up ahead of the location to dam the river. Three 6-inch Rex pumps were used to lift

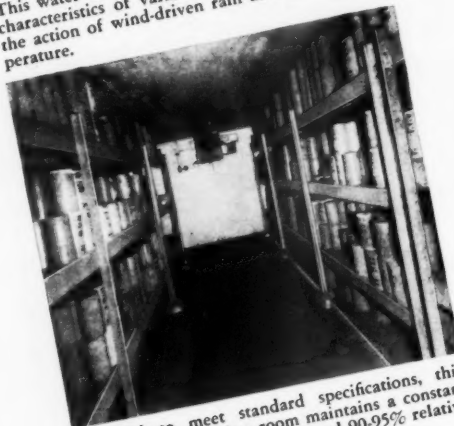


Here's how Dewey and Almy

... through a practical



This water tray, used to test the water-absorption characteristics of various concretes, can simulate the action of wind-driven rain at a constant temperature.



Designed to meet standard specifications, this moist or "fog" curing room maintains a constant temperature of 23°C. ($\pm 1^\circ$), and 90-95% relative humidity. Capacity, 4000 cylinders.

Pour more durable concrete today. Use concrete in new ways. Place it faster and easier. Cure it more conveniently. Or, grind raw material and cement clinker more efficiently. Greater, more economical production rates.

Dewey and Almy research helps the cement and concrete industries do all these things, and more.

Each Dewey and Almy construction product is a result of never-ending research and quality control in one of the most extensively equipped private laboratories in the cement and concrete industries. Facilities include cement grinding, ingenious mixers that simulate large field mixers; aggregate and cements from all over the world; freezing equipment to test frost action in both small and field specimens; sonar for non-destructive testing; specialized equipment for controlling the characteristics of various types of hydraulic cements; every practical tool and test needed for evaluating formwork mixes, and aggregates.

Practical research on an industry-wide scale is one reason Dewey and Almy construction products consistently are superior where it counts most — in the field, on the job.

the river's flow over to the sand-bagged channel, which carried it safely across the location.

Northwest draglines then dug the open cut necessary for the pipe, and smaller pumps kept the ground water away. After the pipe was in, the concrete encasement was formed by wood panels, the steel reinforcing was placed, and the concrete was hauled in by truck mixers and transferred to the pour by crane. The entire operation took only 20 days and was finished ahead of fall rains.

By the beginning of November, all the time that had been lost was regained, and the many adverse conditions which had threatened to slow

the job down or make it well nigh impossible had been met and whipped. Contractor's men and engineers alike were especially grateful that the dangerous high-tension situation had been solved without a single electrocution or burn.

Personnel

The interesting pipeline undertaking was designed by Water and Power Department engineers under the general supervision of Burton S. Grant, Chief Engineer. Charles J. Itter was in direct charge of design. Max K. Socha was Distribution Engineer, and George Adrian was Resident Engineer.

United Concrete Pipe Corp. key

officials, in addition to General Superintendent Roy Chinnici, included William Efau, Robert Wilkins, and William Lytle, one at each of the three headings.

Winter Work Clothes

A line of insulated cold-weather clothing is offered by the Insulated Clothing Mfg. Co., Inc., 33 E. 38 St., New York 16, N. Y. Weather-Alls are said to keep the wearer comfortable from 40 degrees below zero to sixty above.

The line includes coats, suits, vests, shorts, caps, hoods, gloves, and socks. The suit weighs 2½



pounds. The apparel is made of nylon, and dry cleans or hand launders.

The manufacturer recommends the clothing as an aid to better production through increased safety, better morale and health, and lessened fatigue.

For further information write to the company, or use the Request Card at page 18. Circle No. 518.

Rock Crushers Described

Literature on gyratory and rock crushers is available from Straub Mfg. Co., 505 Chestnut St., Oakland 20, Calif.

Cross-section drawings and accompanying text describe the Kue-Ken crushers' working parts and specifications. Other information given includes an explanation of the working principles of the crushers, and a check list of factors to consider in choosing a crusher. A section is devoted to evaluating individual crushing problems in order to decide on the size crusher required, the size of receiving opening, and the length of crushing stroke best suited to the work to be done.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle Nos. 404, 405 for Catalogs 604R and 605.

Plaster-Mortar Mixers

A reference table comparing features, dimensions, and capacities of three new plaster-mortar mixers has been incorporated in a catalog issued by the Kwik-Mix Co., Port Washington, Wis. Two 6-cubic-foot models and a 3-cubic-foot model are included in the comparison.

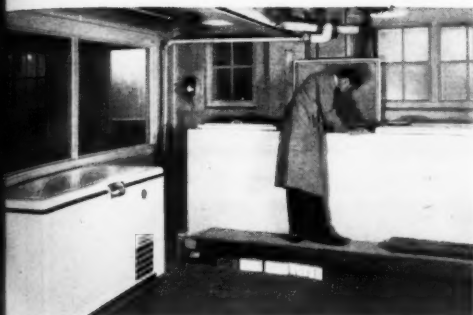
Both tilting and non-tilting plaster-mortar mixers are side-discharge models. A telescopic axle reduces over-all width to 32½ inches and permits machine movement through standard doorways for indoor operation, according to the manufacturer. Other features include a simple clutch arrangement, V-belt drive, single-cylinder 6.4-hp gasoline engine, and wide wheel base.

This literature may be obtained from Kwik-Mix. Or use the Request Card at page 18. Circle No. 532.

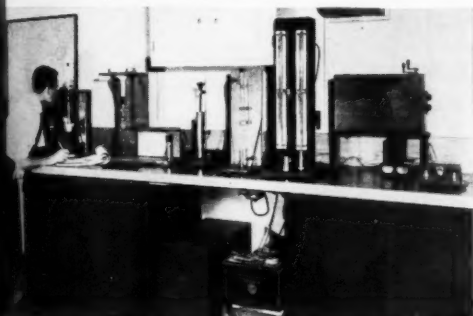
Look out for the man who is behind the wheel which is behind the car that is in front of you.

Al helps you get better concrete

eliminating ground that mirrors field conditions



above is a small freezer (minimum temperature -18°F) for mental freeze-thaw cycles. At right is a constant-temperature chamber that can be controlled within 1/10° in a range of 60-200°F, various wind and humidity conditions.



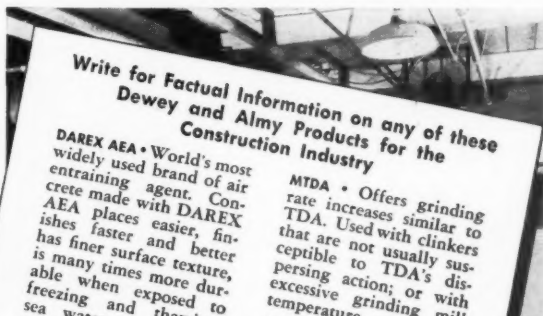
more important than the wealth of evaluating apparatus in Almy's laboratory at Cambridge, Mass., is the specialized use of the engineers who translate test results into practical cements.



and Almy research virtually re-creates the portland cement industry in a laboratory, from raw material grinding to final cement. This battery of cement tests and evaluates hydraulic cement



Over 1500 different samples of cement and aggregates from almost every state, as well as many foreign countries, are available for tests.



Write for Factual Information on any of these Dewey and Almy Products for the Construction Industry

DAREX AEA • World's most widely used brand of air-entraining agent. Concrete made with DAREX AEA places easier, finishes faster and better, has finer surface texture, is many times more durable when exposed to sea water or sulphate action.

DARASEAL • Creates a "membrane" film which keeps water in new concrete for better and more complete curing.

TDA • A catalyzing grinding aid for cement mills. Increases grinding rates of Type 1 cement 15 to 20%; of Type 2 cement 20 to 25%; of Type 3 cement 25 to 50%.

MTDA • Offers grinding rate increases similar to TDA. Used with clinkers that are not usually susceptible to TDA's dispersing action; or with excessive grinding mill temperature.

AIRALON • A ready-to-use air-entraining agent and plasticizer that contains the saponified resin acids and fatty acids necessary to make a superior masonry cement.

RDA & MRDA • Grinding aids especially formulated for making oil well cement.

Construction Specialties Division



DEWEY and ALMY
Chemical Company

Cambridge 40, Mass • Montreal 32, Canada • Chicago 38 • San Leandro, Calif.



"We're desperately in need of engineers—leaving no stone unturned!"

Pre-Drawn Symbols

The drawing of repetitive standard drafting symbols can be replaced by stick-on strips of pre-printed adhesive labels. Signs for such layouts as walls, aisles, conveyors, mono-rails, columns, shafts, stairways, and

service lines can be taken out of a stock of symbols and attached to the drawing like drafting tape. No moistening is needed. Changes in layouts can be made by stripping the tape from its original position and placing it wherever wanted.

Further information may be secured from the Labelon Tape Co., Inc., 450 Atlantic Ave., Rochester 9, N. Y. Or use the Request Card at page 18. Circle No. 406.

FWD Promotes DeCoursin

G. F. DeCoursin is the new General Sales Manager for the Four Wheel Drive Co., Clintonville, Wis. Starting in the factory in 1936, he became familiar with the manufacture of FWD trucks and advanced rapidly, holding successive positions in the company. In 1950 he was chosen Field Sales Manager, a post which he held until now.



For Vent Pipe and Air Lines...

GET THE FACTS ON

NAYLOR Lightweight PIPE



Where the job calls for ventilating or other air lines for either high or low-pressure service, more and more contractors are specifying Naylor pipe. Here is the one lightweight pipe with the built-in strength and safety required for this service. Its light weight makes it easy to handle and install, especially with Naylor's Wedge-Lock coupling. Its exclusive Lockseam Spiralweld structure provides a reinforcing truss which adds collapse strength for push-pull applications. Features like these make it particularly helpful in the construction field. Sizes from 4 to 30 inches in diameter.

For the facts, write for Bulletins No. 507, No. 513 and No. 514.

NAYLOR PIPE

NAYLOR PIPE COMPANY

1270 East 92nd Street, Chicago 19, Illinois

New York Office: 350 Madison Avenue, New York 17, New York



Concrete-Curing Papers

Concrete-curing paper that is said to retain its strength even after repeated soakings is the subject of a new folder from the Angier Corp., Framingham, Mass.

A table describes and gives the uses of the company's line of 8 papers, particularly the Bur-la-mat and the Protect-o-mat.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 452.

STURDILITE

HEAVY DUTY FLOOD LAMPS

**For Better Light—Longer Service—Lower Cost
Especially Designed for Efficient
Service on Shovels, Excavators,
Drag-Lines, Roadbuilding Equipment—
Locomotive Cranes, Tractors . . .**



Rubber Mounted Base—
Standard Model



STURDILITE Heavy-Duty Flood Lamps provide specially high light intensity and spread, heavily constructed for years of trouble-free service. Hermetically sealed-beam lamp—no reflector to tarnish. Spring-mounted socket. Complete assembly mounted on rubber cushioned base to absorb vibration and shocks. Available in 6-8, 12-16, 24-28 and 110-120 voltages.

Portable STURDILITE

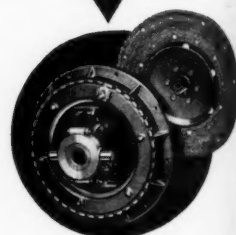
New model for inside or outside use. Equipped with convenient carrying handle and substantial pedestal base. Spring-mounted light socket. 4-ft. cord and connector. For all voltages. Weighs only 12 lbs.

SEND FOR ILLUSTRATED BULLETIN
Specifications, Quantity Prices

Metal Spinning Division
PHOENIX PRODUCTS COMPANY

4727 N. 27TH STREET, MILWAUKEE 16, WISCONSIN

Does Nine Different Kinds



of Construction Clean-Ups

Huber Manufacturing Company's versatile MAIN-TAINER has hydraulically operated attachments that enable it to perform many kinds of clean-up work around construction jobs. ROCKFORD CLUTCHES provide efficient power transmission control for this 42-1/2 H.P. unit. Let ROCKFORD clutch engineers help your designers plan versatile power transmission controls for your Machines.

ROCKFORD CLUTCH DIVISION ROCKFORD, ILL.
314 Catherine Street, Rockford, Illinois, U.S.A.



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MAKES IT
AVAILABLE



ENGINEERING
BULLETIN
SENT ON
REQUEST

ROCKFORD CLUTCHES

CONTRACTORS AND ENGINEERS

Tar Coat Protects Metal and Concrete

A coal-tar pitch coating that is said to protect metal from corrosion and act as a moistureproof seal on concrete surfaces is made by the Barrett Division of Allied Chemical and Dye Corp., 40 Rector St., New York 6, N. Y.

The 34Yb cold coating is for use on steel and concrete structures that are subject to deterioration by continuous exposure to water and corrosive vapors, and may also be used on metal surfaces when the application of hot enamel is not practical. It is suitable for protecting all types of septic tanks. A recent application was on the steel and concrete substructure of Pier 57 in New York City.

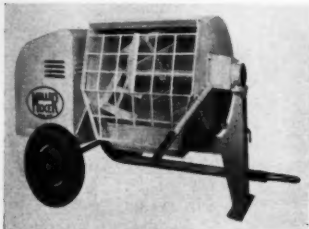
For further information write to the company, or use the Request Card at page 18. Circle No. 479.

Three Mortar Mixers

Three new models of its plaster and mortar mixers have been announced by Muller Machinery Co., Inc., Metuchen, N. J. The Series 100, 120, and 160 all have the paddle-shaft seal which is said to protect the bearings.

The improved 3½-foot model now has a power throwout, a hinged engine housing, self-lubrication, self-aligning bearings, ball thrust on paddle shaft, and a new safety grid.

The 6-foot model has a double V-belt drive from engine to countershaft, with a power throwout (on gasoline models) that makes clutch adjustments unnecessary. The drive from countershaft to paddle shaft is through machine-cut gears.



The 6-foot Series 120 mixer model.

The 6 to 8-foot model, for large jobs, is equipped with a 7-hp Wisconsin air-cooled engine with a built-in disk-type clutch running in oil. Drive from engine to countershaft is by roller chain. A larger model, the standard 9-foot model, with full 3-bag capacity, is also available.

For further information write to the company or use the Request Card at page 18. Circle No. 496.

Col. Barnes Is Engineer For Albuquerque District

Col. Lynn C. Barnes has taken over the post of Albuquerque (N. Mex.) District Engineer in succession to Col. Charles H. McNutt who now becomes Chief of Staff of the 6th Armored Division at Fort Leonard Wood, Mo.

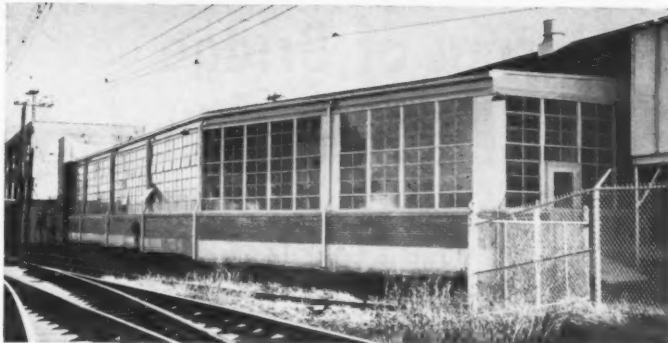
Col. Barnes received the Legion of Merit for his service as St. Paul (Minn.) District Engineer in 1943. After serving on various other construction projects, he joined the Far East Command in 1950 as Chief, Engineering and Operations Division, Engineer Section, General Headquarters—a post which he held until

his present appointment. His services there won for him an Oak Leaf Cluster to his Legion of Merit.

Literature on Winch Hoist

A bulletin on a ratchet-operated winch-hoist is available from The Lug-All Co., 331 E. Lancaster Ave., Wynnewood, Pa. It lists specifications for three models which are essentially identical except for variations in cable size, cable length, and cable capacity. Top pull or lift is 5 feet at 1½-ton rating.

To obtain this literature, write to the company requesting Bulletin 221, or use the Request Card at page 18. Circle No. 481.



The new Hydraulic Department building of The Baker Mfg. Co., Springfield, Ill., designer and builder of bulldozers and root rippers for Allis-Chalmers crawler tractors. This, the first phase of the Baker expansion program to double present production, will be followed by the completion of larger facilities for the Engineering Department, enlargement of office space, and further development of assembly-line techniques.

cut costs 3 ways!

WITH Whiteman CONCRETE EQUIPMENT

1

PLACING

Big savings on concrete jobs begin when Whiteman Power Buggies are used for placing. These willing workers actually do the work of six men with hand buggies. They scoot over light scaffolds at 16 mph, up 25% grades, over soft earth. They're gluttons for work, never get tired. Priced so low, can pay for themselves on just one job!



2

SCREEDING

More savings with Whiteman Screeding Machines. Much faster than hand screeding, with half the manpower. Do a better job, too. Vibrate concrete throughout entire depth and area, compact slab, bring moisture to surface, screed to a perfect level. Heavier aggregates remain in suspension making a far more durable slab. Adjustable width.



3

FINISHING

Final savings come with Whiteman Floating-Finishing Machines. One man can do the work of six hand trowels and do it much better. Exclusive "snap-on" float trowels adapt machine in minutes for floating. Tool steel finishing trowels. Trowel pitch easily adjustable with machine in motion... a Whiteman exclusive. 3 models.



Whiteman

THE LEADER IN CONCRETE EQUIPMENT

WHITEMAN MFG. CO., DEPT. CE
3249 Casitas Ave., Los Angeles 39, Calif.
Please send prices, literature and name of distributor for Power Buggy, Screeding Machines, Floating Finishing Machines.

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

Lowering of Bridge By Hydraulic Jacks

Old Bridge Is Removed and Dismantled. Lift-Slab Method Is Used to Lower the Spans

• IT is four years now since a new and higher bridge was completed to carry U. S. 61 over the waters of the Yazoo River near Vicksburg Miss. (see C. & E., March, 1949, pg. 2). The new structure is located downstream of the old bridge, which was constantly threatened by the floodwaters of the Yazoo so that its south pier was in danger.

Early last year the State of Mississippi offered the old bridge for sale, with the stipulation that the purchaser dismantle and remove it from the site. Hyde Construction Co., Jackson, Miss., was the successful bidder, and this company called on Texas Construction Co., Dallas, Texas, to perform and supervise the work. Subcontractors were Liberty Iron & Metal Co. and the S & L Construction Co., both with headquarters in Dallas.

Salvage Scheme

The bridge, which was built in 1926, consists of two through trusses, each 350 feet long and weighing 340 tons (structural steel only). The lower chord of the bridge was 120 feet above the riverbed, 80 feet above high ground at the north pier. At the time the job was contracted the chord was about 70 feet above water level. The structure was in excellent condition.

The original plan was to lower the bridge onto barges and float it downstream to a county bridge site, where it would be raised on new piers. The Yazoo, however, receded so much during the long drought that barges could not navigate to the site, and it was therefore decided to land the bridge on the dry bank and cantilever it over the water to be dismantled and re-erected at the new location.

Youtz-Slick Method

The contractor decided to use the



A general view of lowering operations at the center pier of the old bridge at Vicksburg, Miss. It is 105 feet from the water line to the top of the pier.

Youtz-Slick lift-slab method, by which hydraulic jacks would lower the bridge between the piers to the ground. The Lift Slab Co., San Antonio, Texas, was employed to supply

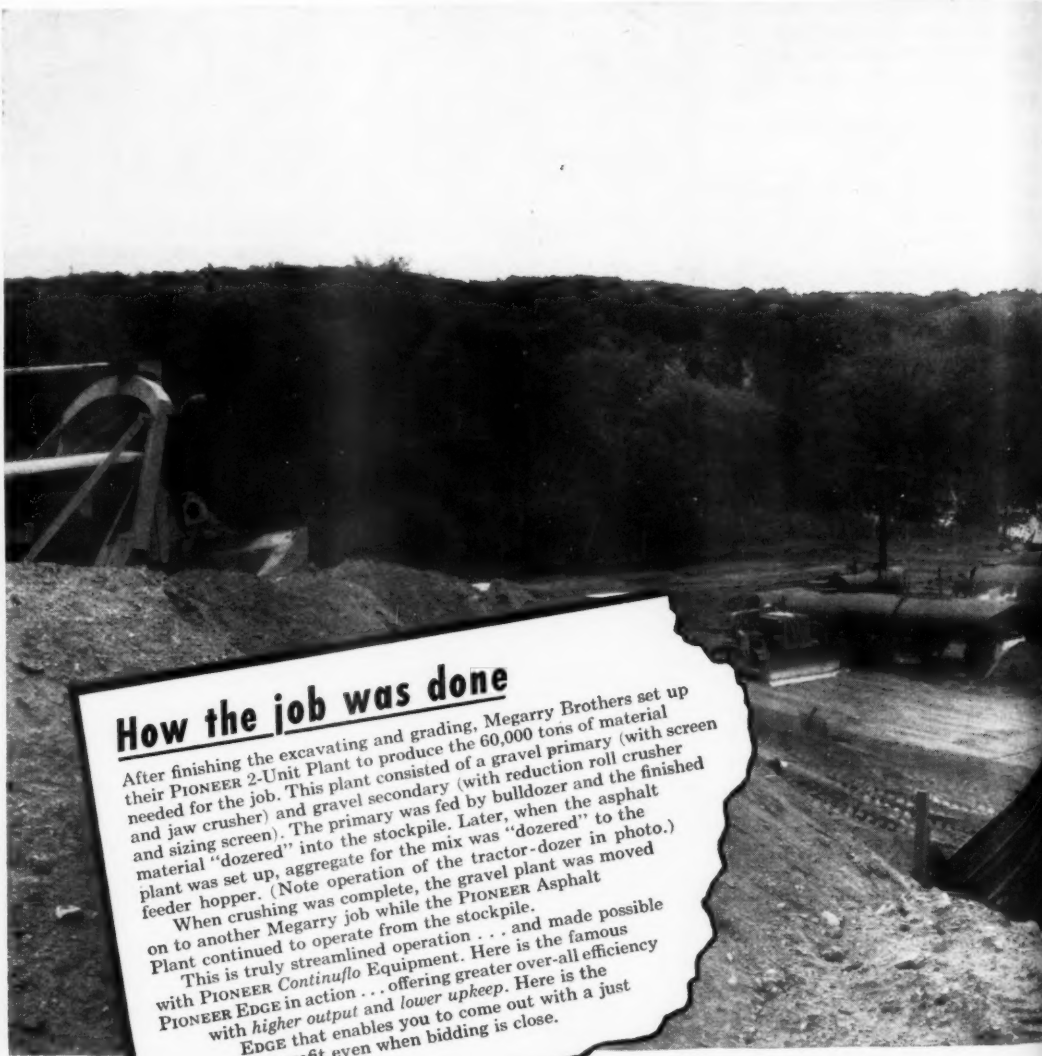
the hydraulic jacks, lifting rods and panel, and to operate the equipment. Work started on August 4, 1952, when the concrete deck was cut into pieces 8 feet square by paving-breaker operations, the reinforcing steel cut, and the squares hauled off the bridge by a winch truck equipped with an A frame. This portion of the work was completed on August 20, and there was a delay of several weeks while the "saddles" upon which the jacks were to rest were being fabricated and delivered from Dallas. During the last half of September and October the trusses were prepared for the actual lowering operation.

Channels of sufficient strength to

carry the load were welded in place so that when the ends of the lower chord and the first diagonal were cut away, a new lower chord would be created. This new section of chord connected to the upper chord in such a position that when the ends of the bridge were removed, the bridge was shorter than the distance between the vertical-faced piers by 2 inches on either end. The new piers were of a shape that readily facilitated the placing of I-beam saddles to hold the jacks. There was a 2-foot offset in the pier 5 feet from the top, and upon this wide-flange columns were set and anchored across the top of the pier.

The hydraulic jacks had a 64-

that Pioneer Edge



How the job was done

After finishing the excavating and grading, Megarry Brothers set up their PIONEER 2-Unit Plant to produce the 60,000 tons of material needed for the job. This plant consisted of a gravel primary (with screen and jaw crusher) and gravel secondary (with reduction roll crusher and sizing screen). The primary was fed by bulldozer and the finished material "dozed" into the stockpile. Later, when the asphalt plant was set up, aggregate for the mix was "dozed" to the feeder hopper. (Note operation of the tractor-dozers in photo.)

When crushing was complete, the PIONEER Asphalt Plant continued to operate from the stockpile.

This is truly streamlined operation... and made possible with PIONEER Continuflo Equipment. Here is the famous PIONEER EDGE in action... offering greater over-all efficiency with higher output and lower upkeep. Here is the EDGE that enables you to come out with a just profit even when bidding is close.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer
Continuflo **EQUIPMENT**

CONTRACTORS AND ENGINEERS



The jack location after the bridge had been lowered 4 feet.

square-inch piston and were operated under 2,000 psi. The bridge was supported on two threaded rods 2 inches in diameter at each jack. There were two jacks at either end of the bridge, a total of 8 jacks and 16 rods. These rods were high-tension 150,000-psi steel.

The lowering operation was conducted by raising the bridge 1/4 inch with the last 1/4 inch of lift in the 3-inch total lift of the jack. With the extended jacks holding the bridge, bolts were located on the rods 2 3/4 inches above the jack base plate, and upon lowering the jack piston the bridge load was transferred to these bolts after a descent of 2 3/4 inches. Thus in each com-

plete cycle the bridge was raised 1/4 inch and lowered 2 3/4 inches. A man stationed at each jack performed the setting of the bolts and maintained the level of the bolt on two additional rods on each jack in such a manner that a hydraulic failure would cause a drop of only a fraction of 1 inch. The rods were of staggered length so that the load could be transferred to the safety rods and additional lengths attached to the lifting rods as needed. This operation was at first performed at both ends of the bridge simultaneously. The jacks at either end of the bridge were controlled through one hydraulic panel, but there was no mechanical connection between the



In this picture the bridge has been lowered about 25 feet.

operations at either end. This lack of positive coordination between the ends caused some horizontal movement in the structure and resulted in a change in procedure, whereby either end was lowered alternately through one lift of the jack. In this manner the bridge was lowered the 80 feet to the ground at a rate of 1 foot per hour. As a protection from excessive horizontal movement, guides were welded to the side of the trusses to slide along the edge of the piers.

The Human Element

When the initial span of the bridge structure was about 6 feet off the ground in the lowering operation, a nut on one of the safety rods was allowed to come in contact with the base of the jack. The entire load of that jack was thus transferred to this one rod before the mistake was discovered. As a result the jack tilted and slid from its base.

This torsion action upon the span caused the jacks to disengage from their bases, and the structure fell the remaining 6 feet to the ground. Some damage was done to about 25 per cent of the members. The accident was due entirely to human error, and no mechanical or structural failure was involved.

Despite the mishap, the participating contractors, insurance carriers, and surety companies maintained confidence in the general method and equipment employed, and approved the use of the hydraulic jacks and rods in lowering the second span. Once on the ground, the structure was dismantled by conventional methods.

This method of lowering the span was undertaken as an experiment with the idea of determining other possible uses for this type of equipment. It is expected to prove more economical than the conventional method of extensive falsework.

Personnel

Consulting Structural Engineer was Peeler & Kinkle, Dallas, Texas; and Bill J. Shelton was Superintendent for Texas Construction Co. For S & L Construction Co., M. D. Wilson was Superintendent; and for Lift Slab Co., Kenneth Hewett.

Sales Manager for Granco

John D. Rosebrough has been appointed Sales Manager of Granco Steel Products Co., Madison, Ill., a subsidiary of Granite City Steel Co., Granite City, Ill.

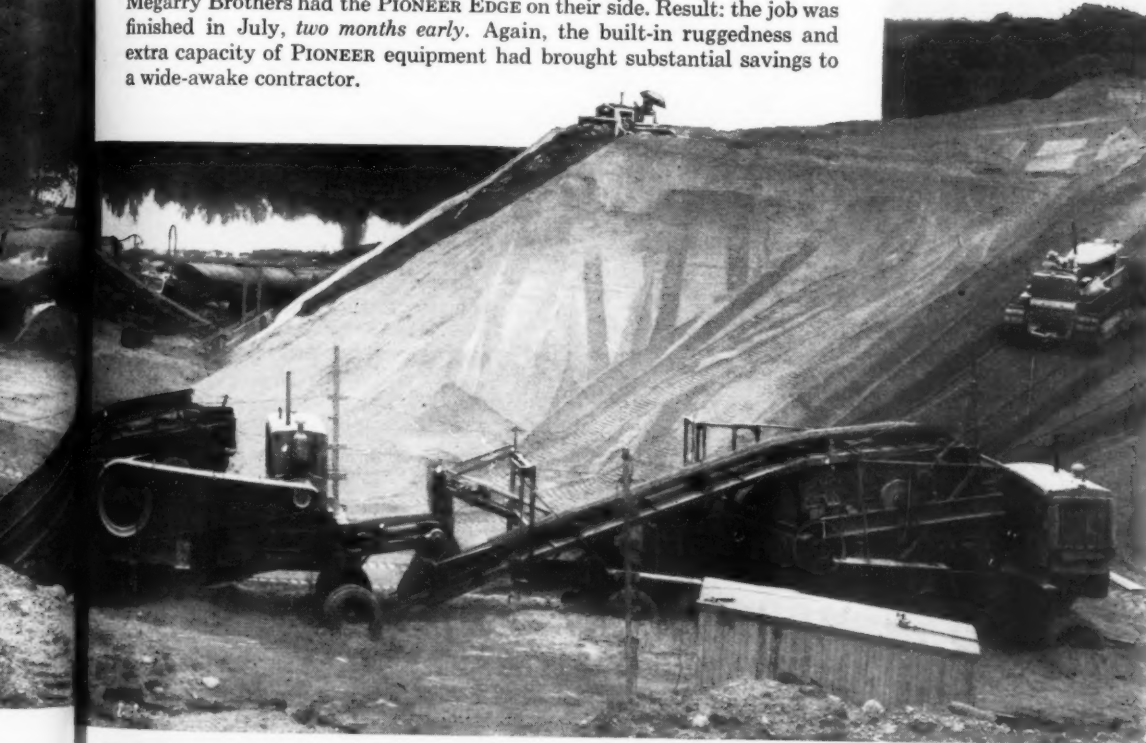
gets you there sooner

Megarry completes job 2 months early

Completing the job ahead of schedule is routine for Megarry Brothers of St. Cloud, Minnesota.

Take, for example, this \$256,946.00 job on Minnesota State Highway 7 between Excelsior and Minneapolis. This 12.2 mile stretch called for 16,578 cubic feet of excavation and placing 35,171 tons of gravel base. The resulting 499,420 square yards of surface required 50,686 tons of bituminous mix. Finally, 2,136 tons of seal coat aggregate were placed on top.

Work began October 1950, and after a winter layover, was resumed the following April. The schedule called for completion September 1, 1951, but Megarry Brothers had the PIONEER EDGE on their side. Result: the job was finished in July, *two months early*. Again, the built-in ruggedness and extra capacity of PIONEER equipment had brought substantial savings to a wide-awake contractor.



Megarry Brothers choose Pioneer

● Megarry Brothers have found that dependable equipment is the key to efficient performance on a construction job. Here is some of the PIONEER equipment they own and operate.

- 1 Model 101 Portable Asphalt Plant consisting of a drier, dust collector, and combination gradation-mixing unit.
- 1 Auxiliary drier.
- 2 2-Unit Portable Plants each consisting of a 150 PG Primary and 140S Secondary.
- 2 40 V Duplex Portable Crushing Plants.
- 1 38 V Duplex Portable Crushing Plant.
- 1 30S W Washing Plant.

PIONEER ENGINEERING WORKS

1515 Central Avenue • Minneapolis 13, Minnesota
(Subsidiary of Poor & Company • Chicago)

● Please send me information on the equipment checked.

- | | | |
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| <input type="checkbox"/> BITUMINOUS PLANTS | <input type="checkbox"/> ROLL CRUSHERS | <input type="checkbox"/> MECHANICAL FEEDERS |
| <input type="checkbox"/> GRAVEL PLANTS | <input type="checkbox"/> WASHING PLANTS | <input type="checkbox"/> VIBRATING SCREENS |
| <input type="checkbox"/> ROCK PLANTS | <input type="checkbox"/> APRON FEEDERS | <input type="checkbox"/> BUZZER SCREENS (LIGHT DUTY) |
| <input type="checkbox"/> JAW CRUSHERS | <input type="checkbox"/> GROUND FEEDERS | <input type="checkbox"/> CONTINUOUS CONVEYORS |

Name _____

Company _____

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City _____

Zone _____ State _____

Data on Industrial Engines

A catalog on high-turbulence engines and power units has been released by the Minneapolis-Moline Co., Minneapolis 1, Minn. The line of engines is suitable for construction

equipment such as cranes, shovels, generators, crushers, trenchers, etc.

The units use natural gas, LP gas, or gasoline fuel.

To obtain this literature, write to the company or use the Request Card at page 18. Circle No. 480.



**It's EAGLE
all the way!**

at **MORRIS SAND & GRAVEL CO.**
MORRIS, ILLINOIS

EAGLE engineered, designed and built this highly productive material washing, classifying and dehydrating plant from the ground up. Those mountains of clean, graded sand in the background are not just a vision. Morris' deposit runs heavy to sand. Gravel is wasted or sold locally. This plant processes over 100-tons per hour. Five to six barges a week are freighted up the Illinois Waterway to Chicago.

Preliminary classification takes place in the two Eagle Water Scalping Tanks. These are fed from a screen with 1" scalping deck, a $\frac{3}{8}$ " middle and a $\frac{1}{4}$ " bottom deck. The double screw unit at left produces mason sand, the double screw in the center produces No. 1 torpedo sand and the double screw at right produces No. 2 torpedo. The single screw unit, with section of paddles, right foreground, handles the minus $\frac{3}{8}$ " plus $\frac{1}{4}$ " material. The extra abrading action afforded by this paddle equipped unit gets rid of the clay, which was a problem, prior to its installation.

Water inlet valves on both tanks at feed end help to float fines to opposite end, at left, permitting concentration of heavier sand at feed end, thereby assisting classification and re-blending to make the three types of sand. Material is dredged from a "bayou" with 8" pump.

Eagle Washing and Classifying equipment may be the solution to your problem. Get the opinion of experienced Eagle engineers — no obligation. Ask for Catalog 47.



STERLING CARTS For Wheeling Concrete and other Materials

IT STANDS
ALONE

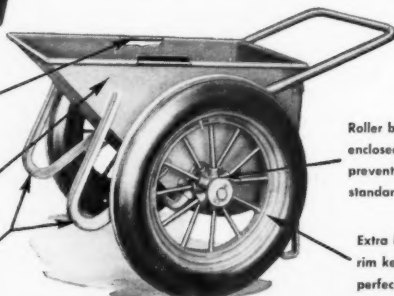


Investigate the unusually sturdy construction of this perfectly balanced cart. It's the best that money can buy. Outlives any other cart. That's why it costs less. Choice of 30" dia. steel wheels or pneumatics. Illustration shows No. 626-PR Cart with dumping rockers and pneumatic tires, 6 cu. ft. capacity, water full. Eight other models. Write for Catalog No. 63.

Top edge reinforced with continuous $\frac{1}{2}$ " dia. butt-welded rod.

Tray is made of 14 gauge steel.

$\frac{1}{4}$ " T-iron rockers facilitate dumping and cleaning out.



Roller bearings, enclosed in cage to prevent locking, are standard equipment.

Extra heavy steel rim keeps wheel in perfect alignment.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling
WHEELBARROWS

Look for this Mark of
STERLING Quality

Fiber-Glass Helmet

A new fiber-glass safety hat has been announced by the United States Safety Service Co., 1215 McGee



St., Kansas City, Mo. Fiber glass is said to give the most favorable strength-weight ratio of any material used for safety hats. It is resilient, and will not split, crack, or deform.

The manufacturers of the Saf-Hed-Hat state that it meets the

American Standards Association code for impact resistance. The cradle of the hat adjusts to any head size.

Further information may be secured from the company. Or use the Request Card at page 18. Circle No. 409.

Folder on Diesel Oil

A folder on diesel oil has been released by the D-A Lubricant Co., Inc., W. 29th St. and Canal, Indianapolis, Ind. According to the text, use of D-A diesel oil in an engine will prevent ring and valve sticking, plugging of oil-control rings and varnish deposits. An alkaline additive in the lubricant neutralizes high sulfur content in fuel oil.

To obtain this literature, write to the company, or use the Request Card that is bound in at page 18. Circle No. 472.

IT'S MASTER CHAMP



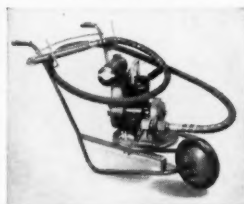
for portable
HYCYCLE VIBRATION



ELIMINATES
FLEXIBLE SHAFT
AND PROVIDES
VIBRATION
ANYWHERE
WITHIN 300 FEET



Electric Flexible Shaft Master Vibrator (above) Gas Flexible Shaft Master Vibrator (below).



You get quick portability with MASTER CHAMP Hycycle Vibrator and two vibrating units. If you need or are using more than one vibrator . . . here's your answer to greater portability and lower cost operation. Rated vibration speed is 10,000 rpm. Also operates one vibrator and 600 watts of light or provides 1,200 watts of lighting through both single phase outlets. And for standard requirements MASTER provides its regular Portable Gas or Electric Flexible Shaft Vibrators. See illustrations at left. The electric vibrator provides dependable vibration where electric power is available. The gas model provides vibration where the extreme portability of hycycle operation is not required.

MASTER VIBRATOR COMPANY • DAYTON 1, OHIO



Master Portable Generator Plants 1/2 KW to 100 KW

Master Vibratory Concrete Finishing Scream

Master Power-Blow Electric Hammer and Spade

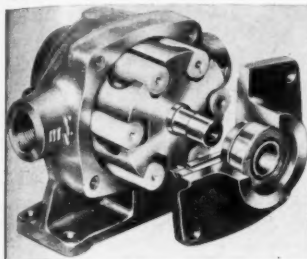
Master Space Heaters

Master Gas or Electric Concrete Vibrators

MASTER
BETTER PRODUCTS FOR BIGGER PROFITS

A Roller-Type Pump

A new roller-type pump has been developed by Hypro Engineering, Inc., Minneapolis, Minn. It is the Hypro 6000—a junior model of the



Hypro 750, with the same design but lower capacities. It will deliver approximately 12.5 gallons per minute open discharge at 800 rpm with recommended pressures to 200

pounds.

The pump handles soluble powder mixtures as well as emulsified solutions, and is recommended by the manufacturer for spraying jobs. The unit is self-priming. It features Ni-Resist case, and is also available in cast iron. It has permanently lubricated ball bearings, a stainless steel shaft, and nylon rollers.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 531.

Coating Repels Water

A new silicone water-repellent coating is announced by the A. C. Horn Co., Inc., 10th St. & 44th Ave., Long Island City 1, N. Y. When treated with Dehydratine No. 22, pores of concrete, stucco, and ma-



This shooting truck with hole loader carries 800 pounds of dynamite, 100 caps, instruments, and tool compartments. Further information may be secured from Loveless Mfg. Co., 1726 E. Oklahoma, Tulsa, Okla. Or Circle 413 on card at page 18.

sonry are said to become effectively water-repellent.

The coating is applied by brush or spray and it will not discolor or change the appearance of masonry

surfaces while preserving them. It is acid and alkali-resistant.

For further information write to the company, or use the Request Card at page 18. Circle No. 530.

Eliminate 70% to 90% of Conveyor Downtime



EVERYTHING is contained INSIDE the pulley shell!

HERE'S a money-saving departure from conventional conveyor drives. A Cedarapids-Schrock Motorized Head Pulley is simply a new application of the long-proven gear reduction drive, with everything... electric motor, reduction gears and all moving parts... contained inside the drum, completely protected from grit, dirt and weather and with no outside parts or motors to service. 70% to 90% of conveyor trouble and downtime is saved by eliminating the exposed parts necessary with conventional pulley drives. In operation, the pulley shell rotates about



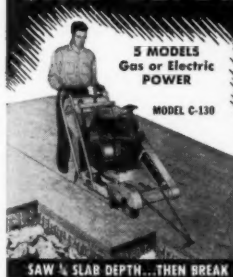
the electric motor which is held stationary by a torque arm attached to the conveyor frame. The speed of the shell depends on the combined reduction ratio of the pinions and gears inside the shell. Compact, easy-to-install, job-proved Motorized Head Pulleys are available in sizes from 5 to 30 HP and in various widths.

Find out all the advantages of converting your belt conveyor or belt-bucket elevator installations to motorized efficiency before you need head pulley replacements. See your distributor today, or write for Bulletin MP-1.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

Built for sale in Arizona, California, Nevada, New Mexico, Southern Oregon, Southwestern Utah and Texas by
YUBA MANUFACTURING CO.
(Pulley and Sprocket Department)
Benico, Calif.

Stop Damaging Building Floors, Streets & Walks—SAW BEFORE BREAKING



SAW 1/4 SLAB DEPTH... THEN BREAK

Experience Proves
A Concrete Saw Must Have
These Clipper Features:

- CLIPPER "NO BIND" SUSPENSION... floating 3-point suspension protects blade
- POSITIVE SCREW FEED... instant control for lowering or raising blade from cut
- ADJUSTABLE DEPTH LOCK... permits pre-setting of cutting depth—instantly adjusted
- STREAMLINED BEARING HOUSING... permits full depth sawing. Factory greased and sealed

NATION-WIDE DIRECT FACTORY SERVICE

- CINCINNATI
- BOSTON
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- HOUSTON
- AUSTIN, TEXAS
- SAN FRANCISCO
- ATLANTA
- DETROIT
- PITTSBURGH
- NEW YORK
- BIRMINGHAM
- S. C.
- LOS ANGELES
- INDIANAPOLIS
- ST. PAUL
- MILWAUKEE
- DALLAS

IN CANADA - P. O. BOX 476, WINDSOR, ONTARIO



"4 OUT OF 5" CONCRETE SAW USERS CHOOSE CLIPPER

Save up to 50% in labor and material. Saw repair patches—saw gas, water, sewer and air line trenches in floors, streets, walks, runways and highways. Save, too, by sawing contraction joints—eliminate costly hand forming and spalling.



GENUINE CLIPPER DIAMOND BLADES

...guaranteed to... "Provide the fastest cut... at the lowest cost... with the greatest ease!"

"Clipper alone can supply every necessary metal bond... in over 36 specifications."

CLIPPER MANUFACTURING CO.

2801 W. WARWICK, KANSAS CITY 8, MO.

Send FREE Literature, Information and Prices on the NEW CLIPPER CONCRETE SAWS 19c

NAME _____
COMPANY _____
STREET _____
CITY _____ STATE _____

Hy-Way

First and Foremost
In Hot Oil Heating
Announces

The New, Patented
"C" SERIES HEATER

(Patent Nos. 2607337 and 2613645)



Designed
AND RECOMMENDED FOR

- Tank Car Heating
- Light Asphalt Storage Tanks
- Concrete Batch Plants
- Smaller Asphalt Plants

For Complete Details, Contact

HY-WAY MACHINERY, INC.
3697 OAKWOOD AVENUE • YOUNGSTOWN 9, OHIO

Distributor Doings

Dealer Dynamometer Testing

Running dynamometer tests on rebuilt and overhauled diesel engines is rapidly becoming standard procedure in the service departments of many diesel-engine distributors and dealers. A recent survey taken by Detroit Diesel Engine Division, General Motors Corp., Detroit, Mich., revealed that over 60 per cent of the Division's distributors had, within the past 18 months, made this testing service available to their customers.

The advantages of the dynamometer are many. With this equipment, dealers can assure owners their rebuilt engines will operate satisfactorily at the specified horsepower

without further down-time for adjustment in the field. The run-in also provides a careful check under controlled conditions of newly assembled parts and workmanship. In addition, piston rings, bearings, and other moving parts are seated to the extent that engines are ready for full-load operation as soon as they are returned to the job.

Complete instruction in dynamometer testing is now offered to distributors' personnel in Detroit Diesel's service training school.

Five Distributors for Gradall

The Warner & Swasey Co., Cleveland, Ohio, announces the appointment of five new distributors to handle sales and service of its Gradall Earthmover. They are, in the United States: J. D. Evans Co., Rapid City and Sioux Falls, S. Dak., for the state of South Dakota; Leonard Motor Co., Albuquerque, N. Mex., for the whole of that state; Rocky Mountain Machinery Co., Salt Lake City, Utah and bordering counties in Idaho and Wyoming; and C. B. Stilwell Equipment Co., Omaha, Nebr., for Nebraska and western Iowa. In Canada, Huggard Equipment Co., Winnipeg, will handle the Gradall throughout the Province of Manitoba.

B-E Appointments

Bucyrus-Erie Co., Milwaukee, Wis., has appointed E. C. Ray Machinery Co., Shreveport, La., to distribute its 3/4 to 4-yard gasoline, diesel, and single-motor electric convertible excavators, dragline buckets, Hydrocranes, and Hydrohoes. Located at 2001 E. Texas Ave., the dealer will serve excavator users in that part of Louisiana north of and including the parishes of Vernon, Rapides, Avoyelles, and Concordia.

Cleveland Bros. Equipment Co., Route 322 (Hershey Road), Harrisburg, Pa., has been named B-E

distributor in east central Pennsylvania. Central also has branches in Wilkes-Barre and Frackville, Pa.

Two Eastern Dealers for Joy

Joy Mfg. Co., Pittsburgh, Pa., has appointed two dealers to handle its entire construction line, including stationary and portable air compressors, rock drills, paving breakers, spaders, tampers, and portable hoists. They are Frantz Tractor Co., located at 2740 Ewen St., New York 63, N. Y., and 1110 Fulton St., Hempstead, Long Island, N. Y.; and East Coast Equipment Co., Highway 29, Mountainside, N. J.

Metalweld Handles Oliver Line

Metalweld, Inc., Hunting Park Ave. & Fox St., Philadelphia 29, Pa., is a new distributor for the line of industrial wheel and crawler tractors manufactured by Oliver Corp., Chi-

cago, Ill. The dealer's territory covers eastern Pennsylvania and Delaware.

The Construction Equipment Division of Metalweld includes in its sales and service representation such line as: Worthington, Lima, Evers, Schield Bantam, Hetherington & Berner, Eagle, Hercules, Aeroquip, Pitman, and Clyde equipment and supplies.

Three New Cleco Dealers

The Cleco Division of the Reed Roller Bit Co., Houston, Texas, has appointed the following distributors for company products in their areas: Grant & Co., 2144 E. 7th St., Los Angeles, Calif.; H. N. Crowder, Jr. Co., 446 Union St., Allentown, Pa.; and Ponsford Equipment Co., 408 Bassett Tower, El Paso, Texas. Cleco manufactures the Cleco and Dallett lines of air tools and accessories.

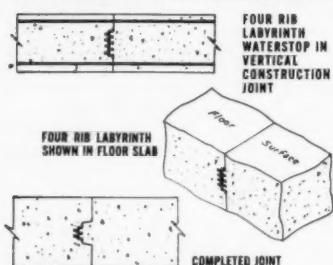
**just nail 'em in...
pour your concrete**



**AND FORGET ABOUT SEEPAGE
WITH LABYRINTH
WATERSTOPS**

Concrete shrinkage can't cause leakage between pours when you're protected by ribbed and grooved polyvinyl plastic Labyrinth Waterstops in the joints. Watertight? Absolutely. Economical? You bet...No special forms, no metal fins to bend or tear...no maintenance cost, AND...

INSTALLATION COST IS VIRTUALLY ZERO!



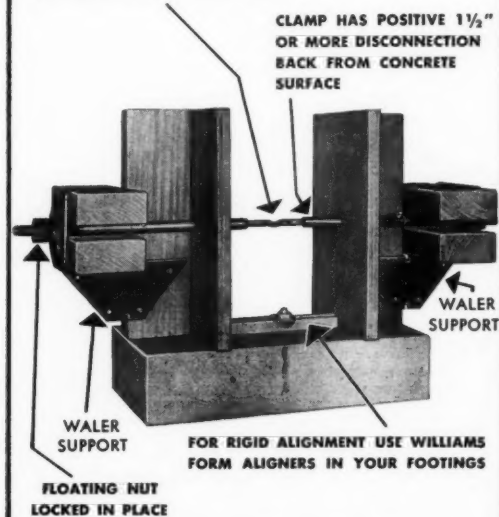
WATER SEALS, inc.
9 SOUTH CLINTON STREET
CHICAGO 6, ILLINOIS

For Further Information and Sample—Clip the Coupon!
Patent applied for

WATER SEALS, INC.,
9 South Clinton St., Chicago 6, Illinois
Send full information and sample.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

**SUPER-HI TENSILE INNER RODS
CRIMPED TO ACT AS JACK-TIES
OR PREVENT TURNING OR PULLING**



**LARGE FACTOR OF SAFETY FOR FAST POURING
WRITE FOR CATALOG No. 1952**

WILLIAMS FORM ENGINEERING CORP.
PHONE 5-9209 GRAND RAPIDS 7, MICHIGAN

NOTHING ELSE LIKE THE AMAZING NEW

USEFUL FOR:

- Estate Owner
- Landscapers
- Municipalities
- Street and Park Departments
- Contractors
- Project Engineers
- Cemeteries
- Sub-Dividers
- Institutions

Write for
FREE
CIRCULAR



**HIGH LIFT or
LOW LIFT MODELS**



Also Plows Snow

IT GRADES: Large tread area, "geared" to the ground, gives lots of traction for a heavy thrust. You can really push things around with "Mighty Mouse".

IT CARRIES: Easily carries heavy loads, piles material high, climbs steep slopes.

IT DUMPS: Bucket trip lever at driver's left hand dumps load instantly, effortlessly, exactly where needed.

IT BACKFILLS: "Mighty Mouse" can soon pay its cost on this work alone, doing the work of many laborers and eliminating rental of heavy machines.

**MEAD
"MIGHTY
MOUSE"
BABY DOZER
and TRACTOR**

Mead's MIGHTY MOUSE High Lift Tractor-Dozer pivots within its own length. Weighs only 1300 lbs. yet does and hydraulically lifts a 5 cubic foot capacity bucket up to 6 feet! Machine only 40 1/2" wide, 95" long, 2 speeds forward and one reverse, 6 H.P. engine. Front end attachments are bucket, dozer blade, mower or rotary broom; rear end pulls rotary tiller, cultivator, plow, scarifier, etc.

It's a perfect answer to so many labor problems that we'd like to show you how it will do a dozen jobs wherever you have grading, excavating, back filling, towing, loading, snow plowing, brush removal, site clearing, road building and you think of the rest! Hydraulic lift, just like the big ones.

MEAD SPECIALTIES COMPANY

Dept. T-613, 4114 No. Knox Ave., Chicago 41, Illinois
MAKERS OF QUALITY AIR POWERED TOOLS FOR INDUSTRY

CONTRACTORS AND ENGINEERS



The Rocket transit concrete mixer has hydraulic chute control.

Truck Concrete Mixer

A new transit concrete mixer—The Rocket—is now in production by the Concrete Transport Mixer Co., 4985 Fyler Ave., St. Louis 9, Mo.

Sure Protection
AGAINST
CAVE-INS



SIMPLEX Drop Forged Steel TRENCH BRACES

For sure protection against cave-ins, injuries and costly re-digging, specify Simplex Trench Braces. Constructed entirely of steel drop forgings, with ball and socket joints, at each end to ensure quick adjustment and tight grip at all angles. Adaptable to any width trench. Sold with or without pipe in a complete range of sizes.

SEND FOR BULLETIN: U 49



TEMPLETON, KENLY & COMPANY

1002 South Central Avenue
Chicago 44, Illinois, U.S.A.

Information on
territories now open
FEBRUARY, 1953

It features a hydraulic chute control, which raises and lowers the discharge chute and eliminates man-handling of chute and extensions.

The Rocket is equipped with an open end-loading device in place of a drum seal. The loading hopper feeds the material into the drum in front of the blades and not behind. This is said to allow the operator to batch a full load more quickly than on some comparable units.

For further information write to the company, or use the Request Card at page 18. Circle No. 497.

Powder-Powered Gun

A catalog on a powder-powered gun that fastens wood, metal, or composition materials to concrete and steel is released by the Powder Power Tool Corp., 7526 S. W. Macadam Ave., Portland 1, Oreg.

The gun is operated by a small explosive charge that drives a hardened steel pin. A large selection of pins is available to fit the job at hand. The catalog lists dealers, by state, on the back page.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 475.

Federal and Fawick Merger

Federal Motor Truck Co., Detroit, Mich., and Fawick Airflex Co., Inc.,

Cleveland, Ohio, have merged to form Federal Fawick Corp. with executive offices in Cleveland and operating divisions in that city and Detroit.

Since 1910 Federal has been pro-

ducing a broad range of motor trucks and special application vehicles for both on and off-the-highway use. Fawick has been engaged in the manufacture of industrial brakes and clutches.



No run-around
with REESE!
(it has the reach)

**YOU LOAD FROM
ANY ONE SIDE**

SPOT YOUR TRUCKS where it suits you best. Then fill them completely from any *one* side with the Reese Loader. Its extra reach and high lift let you dump into every corner from *one* side. There's no half-filling, then jockeying around to finish the job. Reese is faster, too, because there's a handy shuttle gear lever on the tractor for those quick back-and-forth trips. You can reverse instantly in any of its six speeds.

Reese Hydraulic Loaders are built in two sizes for Minneapolis-Moline UTIL and RTI Tractors. See your local dealer or write for catalog.

REESE ENGINEERING CO., 9517 Rush St., El Monte, Calif.

HIGH LIFT—More than 10-foot clearance under bucket permits loading of the highest trucks with a Reese Hydraulic Loader.



VARIETY OF USES—The Reese Loader is adaptable to a variety of jobs. The fork lift, jib boom and back-fill blade are also available. Each can be installed in less than fifteen minutes.

REESE Hydraulic Loaders

**STEAM
IN TWO
MINUTES from
a cold start**

with the **LITTLEFORD "Kwik-Steam"** Vapor-Clarkson Generator

FOR PILE DRIVING

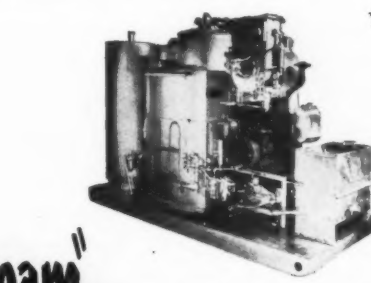
The "Kwik-Steam" Generator is a compact, lightweight, economical unit that will get up steam pressure quickly and can easily be transported around the job, plus a unit that is automatically controlled and yet gives a full capacity of steam instantly when needed.

This Unit will produce steam in two minutes from a cold start and gives steam only when steam is needed. No experienced operator is needed on the job hours ahead to get up steam, saving hours of labor. Burning low-cost fuel-oil, the "Kwik-Steam" Generator saves up to 50% on fuel. "Kwik-Steam" Generator meets every need for Pile Driving or Pile Extraction will operate any make of hammer. Made in sizes from 20 to 165 BHP. Can be had with electric motor or gasoline engine. Write for Pile Driving Bulletin.



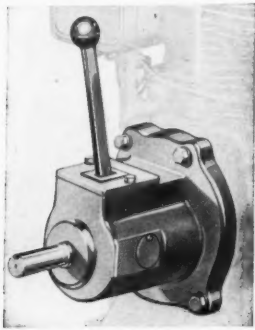
LITTLEFORD

LITTLEFORD BROS., INC., 485 E. PEARL ST., CINCINNATI 2, OHIO



Clutch for Engines

A new clutch for installation on its models 9FB, 14FB and 23FB engines is announced by the Briggs & Stratton Corp., 2711 No. 13th St., Milwaukee, Wis.



The clutch is manually operated, compact and, according to the manufacturer, has ample capacity for

every operation within the power range of the engines. This dry-plate over-center type of clutch, mounted directly on the engine crankcase, gives neutral and power engagement for safety of operation.

The power takeoff shaft is in a double-thrust ball bearing. No lubrication is required other than occasional greasing of the bronze throw-out bearing, which is accessible through a greasing porthole.

For further information write to the company, or use the Request Card at page 18. Circle No. 443.

Motor-Grader Booklet

A 27-page booklet on the Model 118 motor grader has been issued by the Galion Iron Works & Mfg. Co., Galion, Ohio. A triple-page illustration shows the grader's working parts in detail. Subsequent sections discuss individual parts of the unit such as body, frame, controls, hydraulic system, and blade assembly. Cutaway drawings help to explain engine and transmission features.

This literature may be obtained from the company, or by using the Request Card at page 18. Circle No. 425.

General Tire Sales Changes

Earl H. Schaub has been appointed Manager, New Distribution, for The General Tire & Rubber Co., Akron, Ohio. Formerly Boston Division Sales Manager, he has been with the company since 1938. In his new post, he will be responsible for further strengthening the distribution of all company products through independent tire dealers in the major markets of the United States.

Paul E. Nelson, former Akron Division Sales Manager, has been promoted to the new position of Manager of Fleet and National Sales for the company. He joined General Tire in 1944. Prior to his Akron assignment he was a territory representative for the New York Division, and later was Kansas City Division head. In his new capacity, Mr. Nelson will

direct the handling of fleet and national sales accounts for the company's Commercial Sales Division.

Three additional sales changes are: J. W. Bogle, former head of the Richmond Division, replaces Mr. Schaub in Boston; Ori T. Lee, former Man-

ager of Truck Tire Sales for the Twin City Division, is the new Akron Sales Manager; and H. B. Nelson, former Manager of Truck Tire Sales for the New York Division, is now Sales Manager for the Buffalo Division.

Stabilization for 1/3 of a cent a square yard*

A Model 54 Wood Roadmixer delivering 350 tons of mix per hour on a Canadian highway job.



With a WOOD Roadmixer

Regardless of materials or binders, you get lowest cost per square yard or per ton with a Model 54 Wood Roadmixer — and here's why:

- You get up to 2800 tons of mix per 8-hour day — you spread your costs over big production.
- You have no central plant — you mix on the job — save equipment and manpower.
- You may use native or local soils.
- You have your choice of emulsion, road-oil, soil-cement, or other chemical mixes — giving complete flexibility in design.

That's just part of the Wood Roadmixer story. Get all of the facts on the Model 54, 42 and 36 from any Wood distributor, or write us direct.

*Per 1" of compacted depth

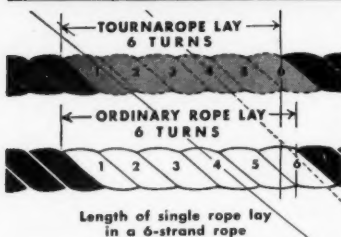
Box 620 • 6900 Tujunga Ave.
North Hollywood, California

WOOD MANUFACTURING CO.

Export Offices: 3938 Wilshire Blvd. • Los Angeles 5, Calif. •

Cable Address: Woodor

More steel per foot, 7% shorter lay give longer rope life



The numerous small sheaves and drums necessary on construction equipment put strains on cables that ordinary wire rope cannot stand. That's why LeTourneau designed a special rope to lick the problems of heavy abrasive service and severe shock loads.

Pre-formed Tournarope averages 7% shorter lay than ordinary rope. Tight-woven strands and wires have a flatter twist and a harder structure. This means greater elasticity and greater flexibility. As a result, Tournarope:

1. Stands up under severe flexing
2. Gives long life service over small sheaves
3. Spools well on small drums
4. Resists kinking, shocks, and fatigue

There's another reason why Tournarope lasts longer. With short-lay Tournarope, you get more steel per foot. In 1000' of 1/2" Tournarope, there is up to 35 lbs. more steel than in ordinary rope.

Try Tournarope the next time you replace wire rope on any of your equipment. See what advantages the 7% shorter lay and specialized construction can mean to you in longer life, fewer replacement delays, and lower annual rope costs. Send coupon for quotation.

R. G. LeTOURNEAU, INC.
Tournarope Division
PEORIA, ILLINOIS

Please quote on.....feet of.....inch diameter Tournarope.....lay,.....construction.....type,.....core, for.....service on.....to:

Name.....
Title.....
Company.....
Address.....
City, State.....
Signed.....
Date.....

YOU CAN ... TAKE IT WITH YOU

IT'S PORTABLE!

Easily transported from job to job and set up for use in minutes.



REMOVABLE SIDE ARMS

The assembled scale can be moved by merely removing six bolts which hold the side levers in place. The complete scale can then be lifted as a unit and loaded onto a truck. Once positioned, it can be ready for use in minutes.

ACCURATE

Perfectly balanced for lifetime accuracy. Wide steel bases, at both ends, support scale therefore require no concrete footing. Easy to read weighbeam is chrome-plated. Other vital parts are electro-plated against corrosion.

Capacities:
20, 25 & 30 Ton
Platform Lengths:
18, 22, 24 and 30 ft.

THE
THURMAN
PORTABLE
TRUCK SCALE

Est
1918

THURMAN MACHINE CO.

SCALE
DIVISION

156 North Fifth Street
Columbus, Ohio

Dept.
C

CONTRACTORS AND ENGINEERS

New Bonding Agent

A substance for bonding all gypsum plasters or portland cements to almost any surface is marketed by Larsen Products Corp., 4670 Elm St., Bethesda, Md. It may be used on concrete block, plaster, cinder block, brick, sheet rock, rock lath, hard-board, monolithic concrete slab, glass, granite, ceramic tile, metal, and marble.

Plaster-Weld is brushed or sprayed on and no special treatment or washing of surfaces is needed. The material is said to be unaffected by humidity and resistant to most acids and alkali. Tensile strength is over 500 pounds per square inch, according to the manufacturer.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 453.

CIMCO TWIN BIN

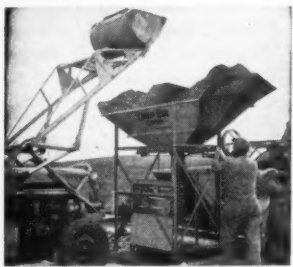
Patent Pending

Choose the RIGHT Twin Bin for a practical answer to QUICKER—CHEAPER—EASIER—DEPENDABLE concrete mixing.

Models A — AW Twin Bin are used with 1-2-3 bag mixers and built to fit your standard wheelbarrow scales for economy.

Models B — BW Twin Bin are used with 1-2-3-4 bag mixers and larger pours.

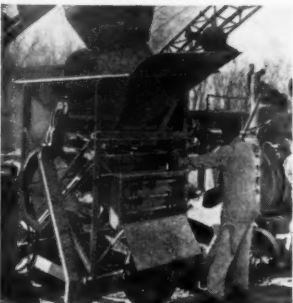
Models AW — BW are permanently mounted upon a rubber tired trailer. You may obtain the trailer if you want to convert your Models A — B to mobile units.



Twin Bin Model A is shown being loaded. The low height allows the use of small low-priced loaders or cranes. The operator is moving the positive shut-off valve to weigh accurately the first time.



Twin Bin Model BW is shown in the forward dumping position. The operator releases the weighed aggregate at the right spot in the mixer skip. The Scale Bin moves on ground packed, jam protected bearings. Its movement allows it to be used with some bituminous plants. Note the screw-jack leveler below left.



Twin Bin Model BW is shown working and being loaded on its permanent trailer mounting. It is easy to set up work, operate and pull. The tongue is in the fold-up position. This model stores and weighs larger batches. Note the Stock Bin with its divided wall and the beams and working parts of the built-in 1000 lb. scales. Three men are doing this job.

For Complete Information On How to Use and Choose the Right Twin Bin for Your Job, Write

CIMCO

BOX 422, MARSHALLTOWN, IOWA, U.S.A.

Write for information on distributor territories now open

FEBRUARY, 1953



The Impactool removes the nut from the roller axle shaft bolt of a tractor.

Power Tool Reduces Maintenance Costs

With one heavy-duty power tool for use of transit-mix trucks and other heavy equipment, an Illinois building-material firm claims it is saving more than \$1,400 a year in labor and parts on tire changes and spring jobs alone. The Economy Coal & Building Material Co., Waukegan, Ill., operates a fleet of 54 trucks, five tractors, two backhoes and a truck crane.

To maintain this heavy equipment has posed many problems in the past, among which were the scarcity of good mechanics and the difficulty of doing many jobs satisfactorily with hand tools. In an effort to solve these snags, the company uses a power tool specifically designed for truck work and other heavy-duty operations — a 34U Ingersoll-Rand electric Impactool.

The tool has not only reduced maintenance costs, but has also caused considerable savings in time. An example is the spring job on smaller trucks. With hand wrenches this job averaged 4 hours; with the Impactool, the time required has

been cut in half.

The tool is used for maintenance work on tracked vehicles as well as on stationary equipment.

Booklet on Taglines

A new bulletin on the installation, operation, and care of its magnet reel and tagline has been issued by the McCaffrey-Ruddock Tagline Corp., 2131 E. 25 St., Los Angeles 11, Calif.

The bulletin describes magnet operations with traveling or overhead cranes and gives data on the Rud-O-Matic tagline for use with clamshell buckets.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 435.

Wilmot Leaves ASCE Post

Sydney Wilmot, Manager of Technical Publications and for thirty years a member of the staff of the American Society of Civil Engineers, has retired. He directed the publication of the entire written record of ASCE technical accomplishments, including "Proceedings", "Transactions", etc., and for 24 years was Secretary of the Society's Committee on Publications. Mr. Wilmot also supervised the editing and publishing of "Civil Engineering" for 16 years. Though retiring from his present post, he will serve as consultant on special problems concerned with editing and publication of technical papers and reports. Mr. Wilmot has been with the ASCE since 1909.

Universal Atlas Ups Bryant

Earl R. Bryant was recently appointed Technical Service Director of Universal Atlas Cement Co., New York, N.Y. With the company since 1941, he was Technical Service Manager at the Kansas City, Mo., office from 1946 until his present appointment.

Mr. Bryant succeeds Homer G. Farmer, who retired in December, 1952, after 41 years of service with Universal Atlas.

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A Correction

In our article last month on the U. S. Bureau of Reclamation's penstock project in Colorado (page 6), the name of Rudy Garity was inadvertently omitted from the list of personnel. Mr. Garity as Superintendent for the contractor—Southwest Welding & Mfg. Co., of Alhambra, Calif.—directed the field operations.

CLASSIFIED ADVERTISING

An advertising inch in the Trading Post is measured 7/8-inch vertically on one column. Space reservations close in the New York office on the 10th of the month preceding publication. Send your classified copy to:

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Manufacturer Memos

Master Builders Co. Elects

The following officers were elected at a recent Board meeting of The Master Builders Co., Cleveland, Ohio, a subsidiary of The American Marietta Co., Chicago, Ill., and manufacturer of technical products for concrete: S. W. Flesheim, Chairman; E. L. McFalls, President; B. R. Wood, Vice President in Charge of Merchandising; W. B. Phillips, Assistant to the President; E. J. Demson, General Sales Manager; G. B. Southworth, Assistant General Sales Manager; V. S. Andrews, Industrial Sales Manager; and J. E. Gingerich, General Plant Manager in charge of the Cleveland, Buffalo, and Toronto plants. Re-elected were: Dr. E. W. Scripture, Jr., Vice

President of Research and Chief of Operations; and F. J. Bates, Secretary and Treasurer.

LeTourneau Sales Changes

A. M. Krider, former District Sales Representative for central Canada and the north central United States, has been appointed Central Sales Manager for R. G. LeTourneau, Inc., Peoria, Ill. He succeeds W. V. Richards who has joined a LeTourneau distributor, Great Plains Equipment Co. of Omaha, as Manager in Charge of Construction Equipment Sales. Taking over Mr. Krider's former position as Sales Representative is John Tuntas, who has been in the company's Parts Coordinating De-

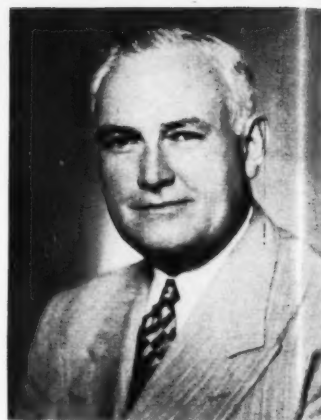
partment as a Parts Representative.

John Sharda, who has been serving LeTourneau as a Sales Engineer in the Tournarope Department, is the new District Sales Representative for Iowa, Illinois, and Indiana. He succeeds R. E. Dickerson, who has joined Illinois Contractors' Equipment Co., another LeTourneau dealer, as Manager of the East Peoria, Ill., branch office.

Canadian Branch for Goodall

Goodall Rubber Co., Trenton, N. J., manufacturer of rubber hose and belting, has opened a branch office and warehouse in Canada. Goodall Rubber Co. of Canada, Ltd., is located at 8 Berkeley St., Toronto 2, Ontario.

Frank A. Sutherland, Jr., who has had wide experience in the mechanical rubber-goods field, has been appointed Manager of the new branch.



G. J. Coffey, new President of Chicago Pneumatic Tool Co.

Coffey Is CP President

Guy J. Coffey has been elected President of Chicago Pneumatic Tool Co., New York, N. Y. He has been with the company since 1933 as Manager of the Los Angeles Sales District and later, a director and Vice President in Charge of Sales. He succeeds the late W. L. Lewis.

H. A. Jackson continues as Chairman of the Board and Chief Executive Officer. Thomas P. Harris and James F. Huvane have been elected Vice Presidents, and Thomas F. Noonan, Assistant Comptroller.

MM Forms Sales Division

An Industrial Sales Division has been formed by Minneapolis-Moline Co., Minneapolis, Minn., to distribute MM industrial tractors and engines. With district headquarters in Minneapolis, Chicago, Kansas City, Los Angeles, Louisville, and Atlanta, the division handles all sales and service of the tractors and power units for industrial, equipment-manufacturer, and oil-field applications, as well as Government contracts for MM industrial tractors and engines.

Division personnel include: E. A. Henry, Industrial Sales Division Manager; E. R. Raveling, Industrial Sales Manager; and George Balch, Service Manager.

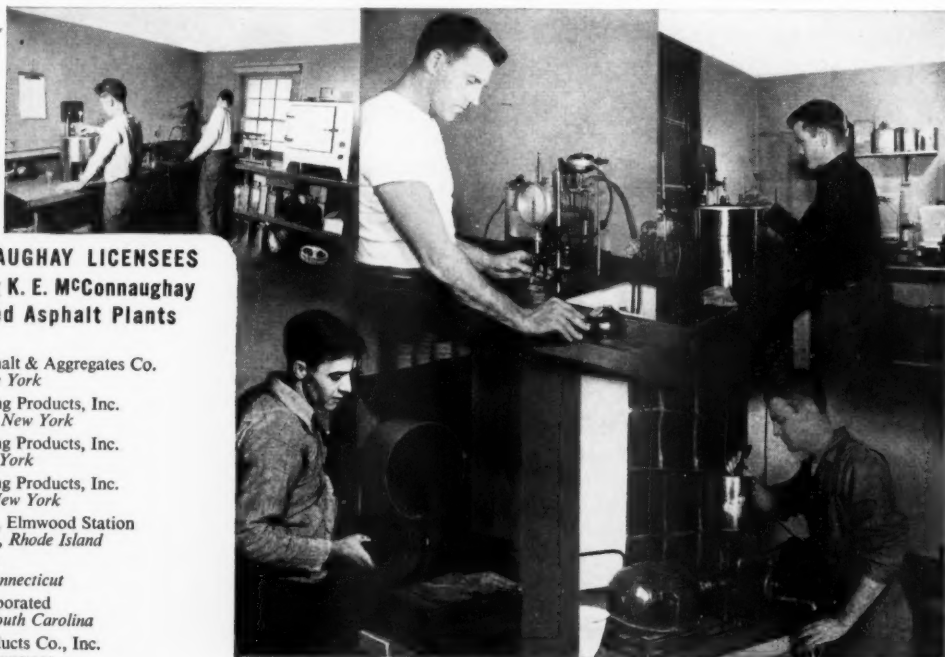
Scholvin for Schield Bantam

Schild Bantam Co., Waverly, Iowa, manufacturer of cranes and shovels, recently named C. W. Scholvin District Manager of its newly created sales territory—eastern Ohio, Pennsylvania, West Virginia, Virginia, and Maryland.

Mr. Scholvin, who makes his headquarters at 2949 Heather Place, Taylor Park, Harrisburg, Pa., has had many years of experience in the construction machinery field. He was formerly associated with R. G. LeTourneau Co. and with La Plant-Choate Co.

Onan Opens Export Office

D. W. Onan & Sons, Inc., Minneapolis, Minn., manufacturer of electric-generating equipment, has opened a new export office in New York City. It is located in Room 1501, 141 Broadway, New York 6, N. Y. A. S. Callan, Manager of the new office, comes to Onan with eight years of experience in foreign installation and survey work with International Standard Electric Co.



MCCONNAUGHAY LICENSEES Operating K. E. McConnaughay Emulsified Asphalt Plants

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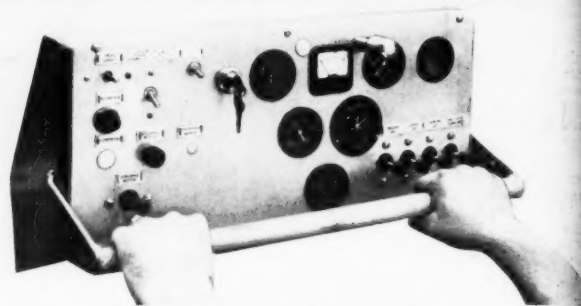
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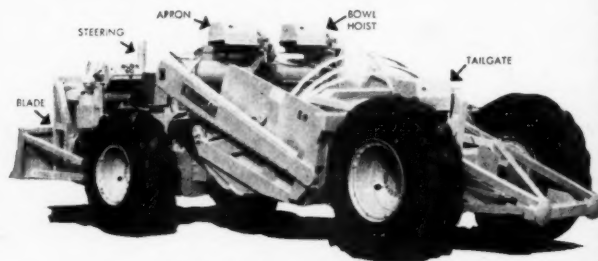
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